PACKAGE engineering

How to run plastic bottles

Switching to small plastic bottles with no cut in running speeds calls for new handling and filling techniques—above all, correct bottle positioning (i.e., orienting) all along the line—Page 31

Laminations versus water vapor

A close look at laminated structures using aluminum foil reveals the importance of relating water vapor transfer to the entire lamination, not merely the separate components—Page 36

Faster packaging of ice cream

Higher output stems not just from a bottleneck-breaking new package (corrugated sleeve) but also from effective supervision, scheduling, material storage and having the right floor layout—Page 42

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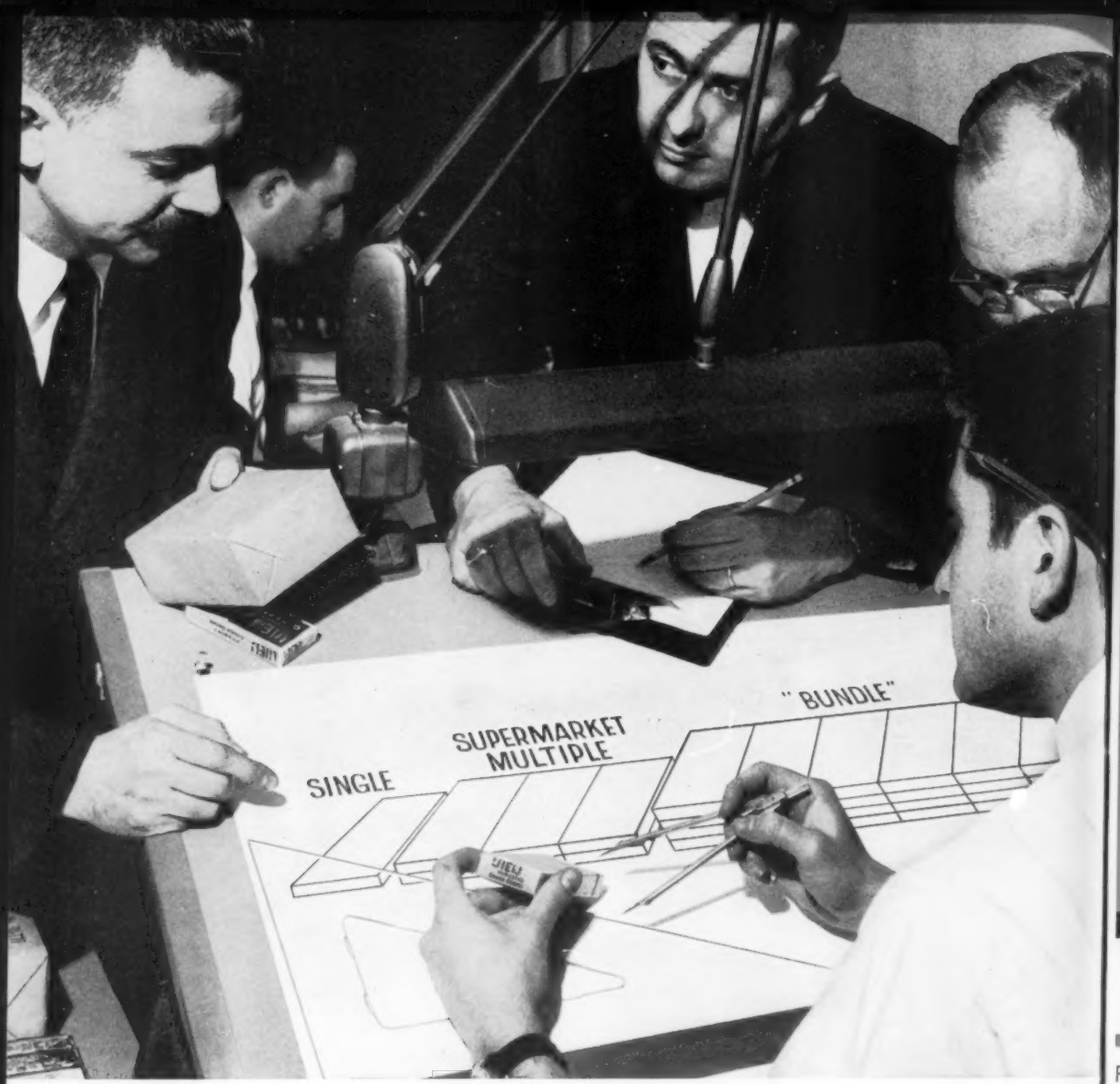
FEBRUARY 1961

VOLUME 6 • NUMBER 2



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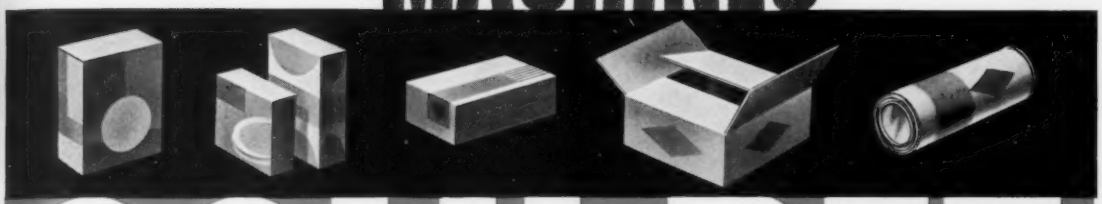

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PACKAGE engineering

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Our December, 1961 issue will carry a cumulative editorial index for the year, listing our feature articles by subject and author.

Package Engineering is indexed in Engineering Index

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A note from the publisher

Is more time needed for thinking?

On reading a summary of statistics from a study made of Purdue University engineering graduates, I was struck by the fact that the most creative engineers seem to be the youngest. The greatest number of patents were granted to graduates within the first ten years after graduation.

I don't think man's ability to think creatively at age 40 is any less than at age 30. Logically it would seem that, with more experience to draw on, the older men would have more patentable ideas than the younger men.

Therefore, I wonder if the reason for this is that older men don't have *time* to think creatively. Do men with the greatest amount of creative ability advance to the more responsible positions so that their minds are engrossed with the day-to-day problems of running a department or a business? Certainly it is important to utilize to maximum effectiveness the known and obvious methods, machinery, or materials, but frequently a big competitive edge can be gained by doing something that has never been done before.

It is a fact that much creative thought is done during leisure time. Newton chanced on the law of gravity by observing the fall of an apple while sitting in his garden. The frozen food field began with a casual observation of the preservative power of freezing on fish, and speculation as to what, if anything, this could mean commercially. Many more cases could be cited of profitable or basic ideas evolving when men have had time to think of the meaning or possibilities of things that are around us all the time.

This is no brief for encouraging loafing, as we are all aware that success in any venture is based on "90-per cent perspiration and 10-per cent inspiration."

Obviously not all companies can afford pure research or a department devoted to thinking exclusively of tomorrow, but every company can afford their men the time and encouragement to think creatively, to ask why—to devise better ways of doing things.

Too much emphasis today is on conformity, but the smashing success is usually a product or a company that does not conform for the sake of conformity, but is the result of creative thinking.

Angus J. Ray

Publisher

PACKAGE engineering®

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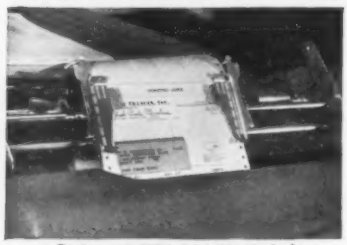

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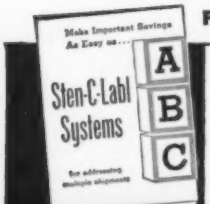

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For your calendar

February 9-10. University of Wisconsin Engineering Institute on packaging industrial products:
Wisconsin Center Building, Madison, Wis. Contact: Richard A. McCormick, institute coordinator, department of engineering, University of Wisconsin, Madison, Wis. *Telephone: ALpine 5-3311, Ext. 2815.*

February 13-17. AMA packaging management course:
Hotel Astor, New York, N.Y. Contact: John L. Wood, packaging coordinator, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

April 4-6. Research and Development Associates 15th Annual Meeting:
Hotel John Marshall, Richmond, Va. Contact: Col. R. A. Isker, secretary, Research and Development Associates, Food and Container Institute, Inc., 1819 W. Pershing Rd., Chicago 9, Ill. *Telephone: LAfayette 3-5500, Ext. 4262 or 4267.*

April 10-12. 30th AMA National Packaging Conference:
McCormick Place (new Lakefront Exposition Center), Chicago, Ill. Contact: John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

April 10-13. 30th AMA National Packaging Exposition:
McCormick Place (new Lakefront Exposition Center), Chicago, Ill. Contact: John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

May 7-11. Institute of Food Technologists 21st Annual Meeting:
Hotel Statler Hilton, New York, N.Y. Contact: Col. C. S. Lawrence, executive secretary, Institute of Food Technologists, 176 W. Adams, Chicago, Ill. *Telephone: ANdover 3-5492.*

October 1-4. Produce Packaging Association 11th Annual Convention and Exposition:
Chase-Park Plaza Hotel, St. Louis, Mo. Contact: Robert L. Carey, executive secretary, Produce Packaging Association, P. O. Box 29, Newark, Del. *Telephone: ENdicott 8-2906.*

October 18-20. Packaging Institute 23rd Annual National Packaging Forum:
Biltmore Hotel, New York, N.Y. Contact: Charles A. Feld, executive director, Packaging Institute, 342 Madison Ave., New York 17, N.Y. *Telephone: MUrray Hill 7-8875.*

November 7-10. Packaging Machinery Manufacturers Institute Show of 1961:
Cobo Hall, Detroit, Mich. Contact: W. L. Redding, Hanson & Shea, Inc., One Gateway Center, Pittsburgh 22, Pa. *Telephone: ATlantic 1-8552.* *(End)*

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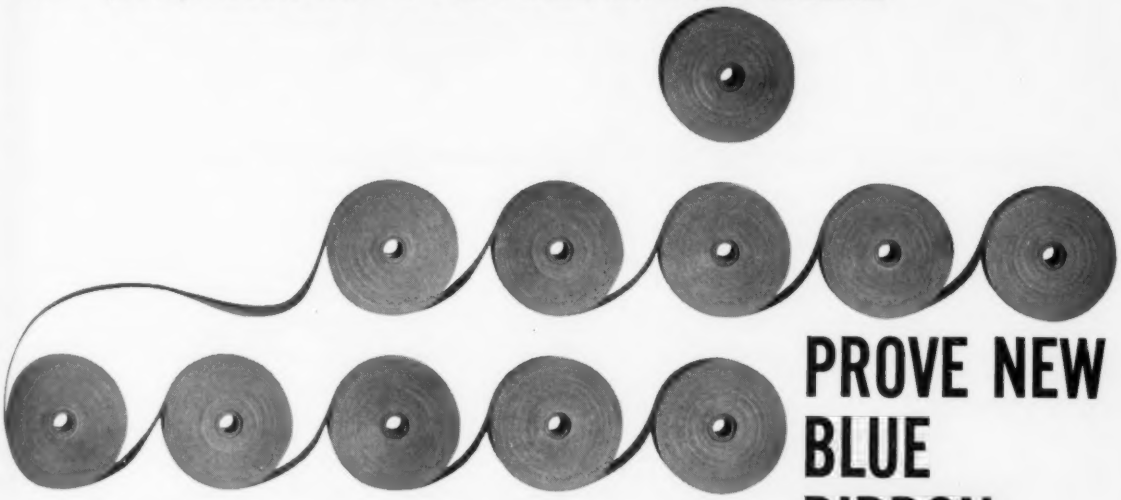

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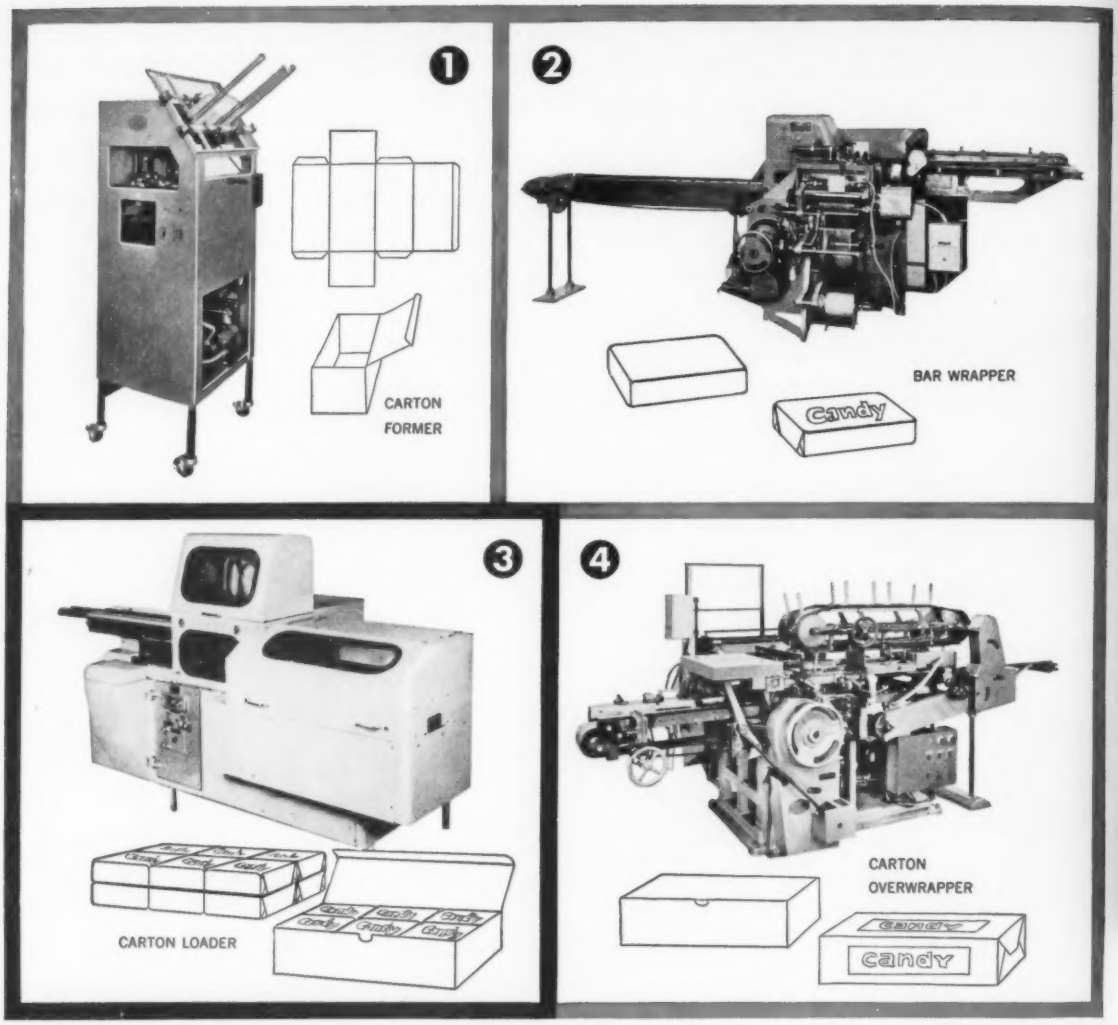

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3. PACKAGE carton forming and wrapping machines tie in easily to the new Forgrove 88 Carton Loader.
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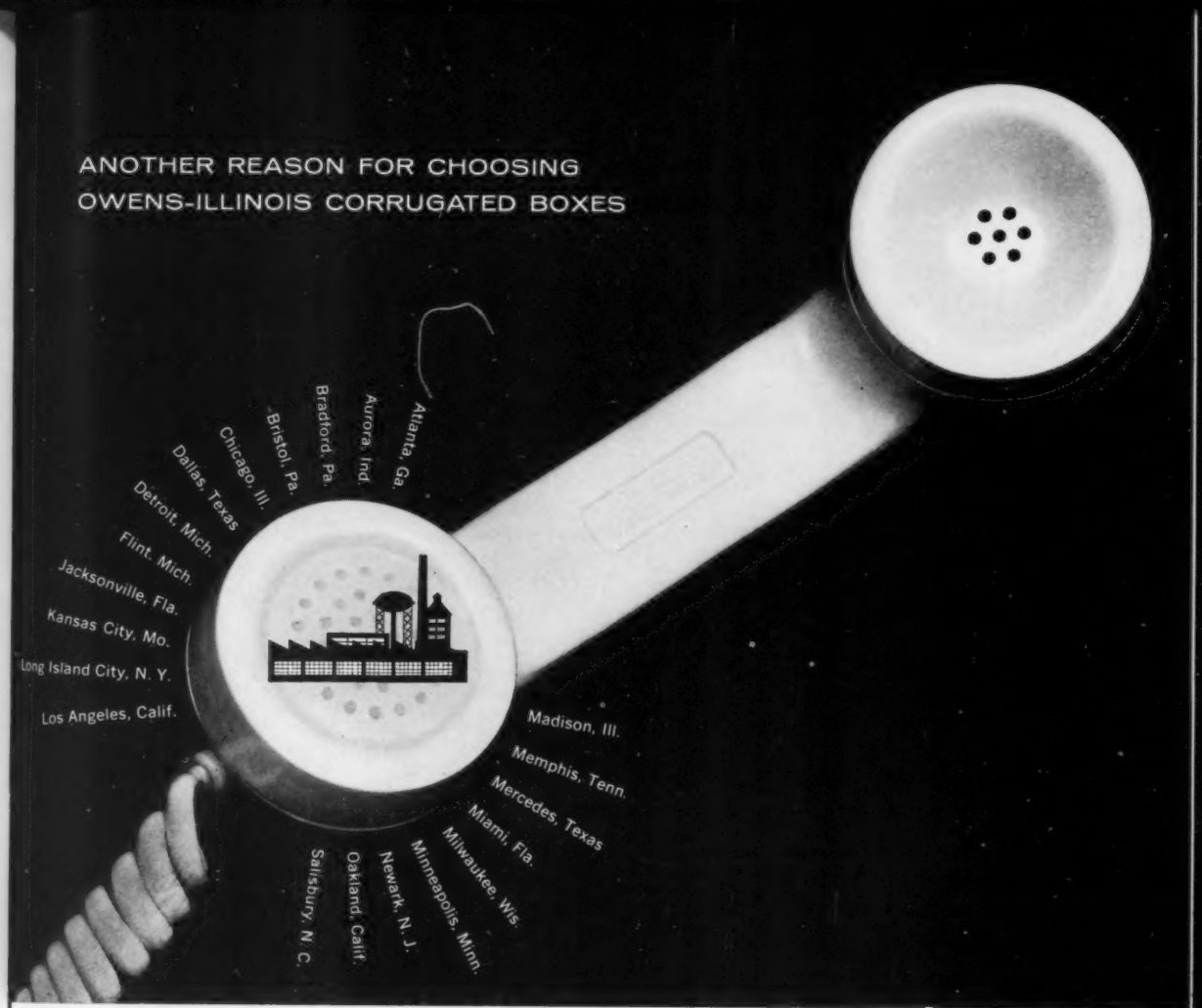

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The PULSE / of packaging

Trends to watch:

Five Florida citrus processing firms are adopting the all-aluminum can as their standard 6-oz. container for frozen juice concentrates for the 1960-61 season. These companies expect to use at least 110 million such cans. . . . Demand for glass containers during 1961 should run 7 per cent above that of 1960, Peter W. Hoguet, president of the ECONOMETRIC INSTITUTE told the Glass Container Manufacturers Institute. Biggest expected growth: nonreturnable beverage bottles. Demand should run 24 per cent above that of 1960.

Interest in no-deposit, no-return glass bottles is growing. PEPSI-COLA CO. is now test marketing its product in these bottles in five scattered cities, notes that retail prices for a carton of six no-deposit, no-return bottles average $0.18 above that of the deposit-return type, exclusive of the normal bottle deposit. . . . Recent reports indicate that metal can shipments for the first ten months of 1960 ran about 4.5 per cent below those of 1959—even though there were increases in 1960 of 59.8 per cent in can shipments for soft drinks and about a 24 per cent increase in cans for fruit, vegetables and juices.

B. T. BABBITT INC. says it has found out why plastic bottles have been collapsing. Contrary to earlier suspicions, it has not been due to anything in the detergent in these bottles, but rather, results from exposure to direct sunlight. We understand this company has made available to the industry a system of opacifiers designed to protect bottle and contents from sunlight.

Producers of high-density polyethylene are enthusiastic about this material's prospects for 1960. George Wash, PHILLIPS CHEMICAL CO.'s plastic sales division director, says demands will break records in 1961, topping even the estimated 180 million pounds of U.S.-produced high-density polyethylene and ethylene copolymer resins sold in 1960. E. E. Winne, vice president of W. R. GRACE & CO.'s polymer chemicals division, predicts 287 million pounds of high-density polyethylene usage during 1961, thinks blown bottles represent one of the most promising applications. Meanwhile, Vincent D. McCarthy, director of plastic sales, U.S. INDUSTRIAL CHEMICALS CO., says demands for conventional polyethylene will run to 465 million pounds in 1961 compared to some 400 million pounds used in 1960. He notes that increasing use of automatic packaging equipment is helping spur this demand.

The Middle West leads in a trend toward overwrapping bread in polyethylene film, according to SPENCER CHEMICAL CO., whose spokesmen note that its home-town area (Kansas City, Mo.) is one of the leaders. We hear 80 per cent of the white bread consumed there is overwrapped in polyethylene with bakers reporting running speeds of 45-60 loaves/min.

Groups in the news:

Hard at work on development of a proposed commercial standard for corrugated boxes, the INDUSTRY ADVISORY COMMITTEE ON CORRUGATED CONTAINER RESEARCH (at Forest Products Laboratory) has been taking a close look at compression, short-column crush, flute height, box dimensions and tolerances. This committee, in advising FPL, gives it specific problems in corrugated box usage, recommends projects to it, hopes to develop basic information from which users can write meaningful box procurement specifications. Another committee aim is to apply scientific analysis of board component and structure performance characteristics to its development of techniques for evaluating quality. At their recent meeting, committee members learned of FPL's work to improve board strength properties through selective use of hard and soft wood pulps and also of its approach to getting more uniform tension (machine and cross directions) during board manufacture.

PACKAGING INSTITUTE has named James W. Field its technical and field service director. Mr. Field was previously with Technical Association of the Pulp and Paper Industry. He will supervise PI's national technical activities. Meanwhile, PI's activities on an international level include pre-taping the story of PI's volunteer cooperative industry work for overseas broadcast on "Voice of America." Further, PI recently joined the EUROPEAN PACKAGING FEDERATION as an associate overseas member.

THE RESEARCH AND DEVELOPMENT ASSOCIATES of the Food and Container Institute has named Lt. Col. Harlan J. Wills, U.S.A.-ret., as its secretary. He succeeds Col. Rohland A. Isker, Associates' secretary since 1948, who is moving to Indian Lake Estates, Fla. Meanwhile, Col. Wills, a 20-year veteran who used his terminal leave to pitch into his new job, announces that proceedings of the Associates' military-industry conference on freeze dehydration, et al., are available at $2.00 per copy (U.S.A.) and $2.50 (foreign) from Research

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Phone: WYman 1-0980 New York: BArclay 7-6421

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if you can hold it in your hand (and it is reasonably rectangular) • • •

Battle Creek Machines can probably wrap it better,

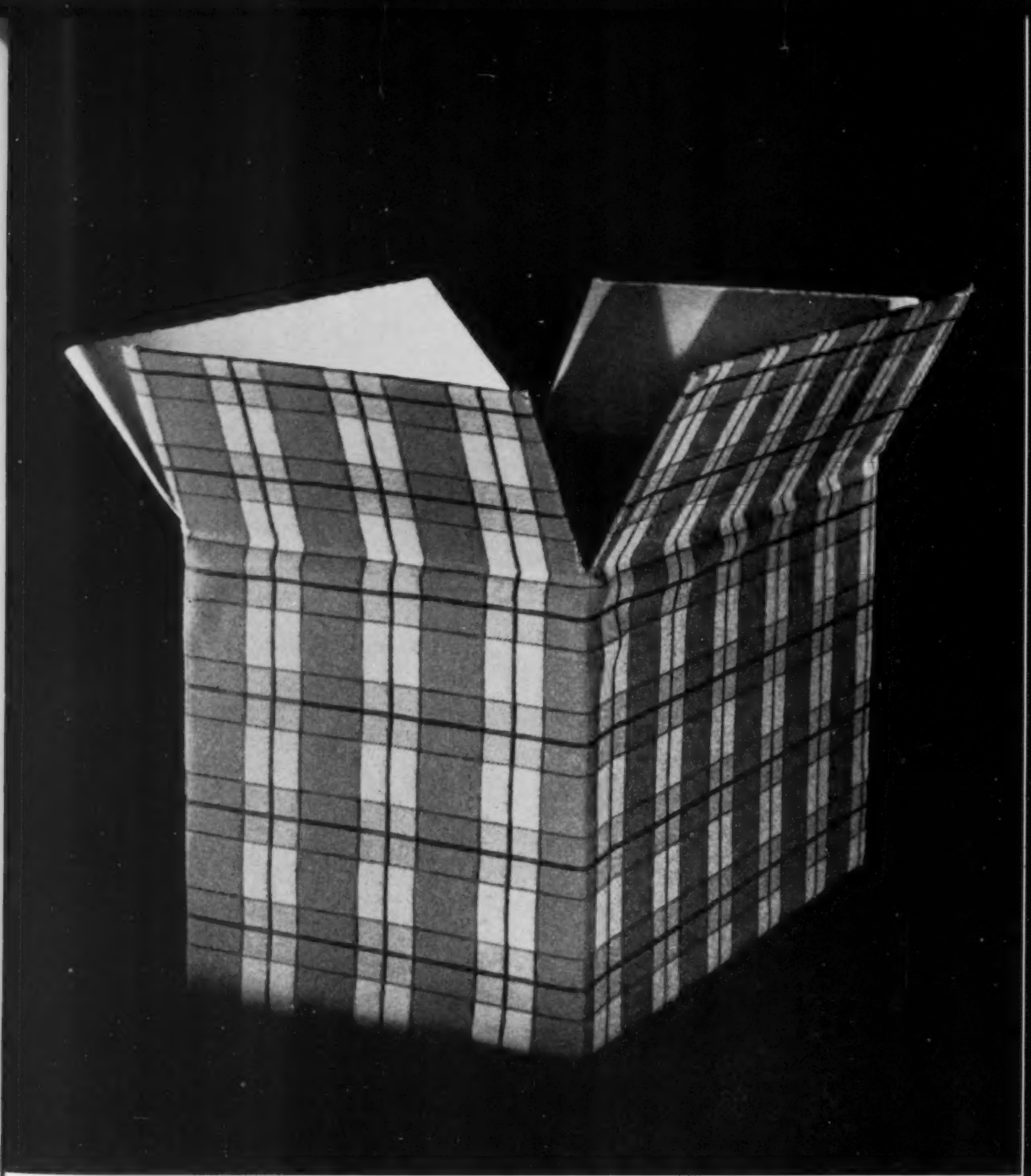
faster, more economically than any other.

Proper packaging methods are related not only to product protection but also to costs, shipping, merchandising and production. A machine which has satisfied management demands for efficient performance in these areas is the Model 47 Variety Packager. Bakery, textile, paper and food products are tightly, firmly wrapped in heat sealing cellophane, wax coated paper or laminated foil at speeds up to 80 per minute. The Model 47 economically creates striking wraps within a size range of 5½" to 12½" long, 2" to 7½" wide and 1" to 4½" high. Changeovers take only 10 to 15 minutes. Ask for details today.

PMMI

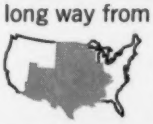
Continuous Flow® PACKAGING

BATTLE CREEK *packaging machines, inc.*, BATTLE CREEK, MICH.



BETTER BOXES FOR SCOTCH-PLAID BUDGETS

With costs becoming increasingly important, most everyone is on a scotch-plaid budget. Dependable delivery; reduction of damage claims through properly designed containers; more efficient use of corrugated, without sacrificing strength; transportation costs; and nearness of supplier's plants are factors which influence the worth of corrugated containers. Consider all the factors, then consider Hoerner. Frugal Scotsmen from Timbuktu to Tipperary swear by us. And we're a long way from Tipperary.



HOERNER BOXES, INC.

CORRUGATED PACKAGING SPECIALISTS FOR MID-AMERICA

GENERAL OFFICES: 600 Morgan Street, Keokuk, Iowa • PLANTS: Fort Smith and Little Rock, Ark.; Des Moines, Keokuk and Ottumwa, Iowa; Danville, Ill.; Minneapolis, Minn.; Tupelo, Miss.; Springfield, Mo.; Sand Springs, Okla.; Sioux Falls, South Dakota; Fort Worth and Mission, Texas • ASSOCIATE: Cajas y Empaques Impermeables, S.A., Mexico City D.F., Mexico

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and Development Associates, 1819 W. Pershing Road, Chicago 9, Ill.

AMERICAN SOCIETY FOR TESTING MATERIALS' Committee F-2 on flexible barriers has formed a group to study extraction test methods for these materials hoping to develop approved extraction procedures for getting FDA clearances. Those interested in this work may contact Karl W. Ninnemann, Olin Mathieson Chemical Corp., New Haven, Conn., chairman of the subcommittee.

NATIONAL INSTITUTE OF PACKAGING, HANDLING AND LOGISTIC ENGINEERS announces an achievement award to be given annually to an individual for outstanding contribution to the development, promotion and application of improved packaging for the military and/or the government. (NIPHLE has a similar award in materials handling and logistics.) Seeking nominations, it says any individual who has made such a contribution may be nominated whether or not a member of NIPHLE. Nominations must reach the awards committee before March 1, 1961, on forms available from NIPHLE, 402 Washington Building, Washington, D.C.

BULK PACKAGING AND CONTAINERIZATION INSTITUTE is a new group now being formed to deal primarily with new concepts in shipping containers and practices and to serve as a clearing house for information on large or bulk containers, and to help establish specifications for them. Managing director of the group is Glenn Mather, P.O. Box 3444, Grand Central Station, New York 17, N.Y.

Packaging across the seas:

Rapid growth of packaging in Italy has prompted ISTITUTO ITALIANO IMBALLAGGIO to launch IPACK, an international biennial packaging and packing exhibition to be held June 20-29, 1961 at the quarters of the Milan Fair. Sponsors of the event say that 224 Italian and 86 other European and overseas exhibitors will occupy 25,000 square metres of pavilions and stalls. The program will include speakers discussing various phases of Italian packaging.

The 200-year-old French firm of MAISON MAILLE, packaging five different mustards in collapsible metal tubes, is now exporting these to the U.S. . . . The Italian affiliate of GEIGY, an American marketer of insecticides, is now manufacturing an aerosol floor wax using an aluminum container and a SOLFRENE, S.p.A. aerosol valve. Both firms are located in Milan.

NATIONAL STARCH AND CHEMICAL CORP. and JORDAN CHEMICAL WORKS (A'sia) PTY. LTD., Sydney, Australia, have formed Jordan-National Co. Pty. Ltd. to make and sell adhesives and vinyl polymers. . . . MARKEM (U.K.) LTD. has a new sales and service office in Welwyn Garden City, Eng. . . . The WALMSLEY (BURY) GROUP LTD., Bury, Lancashire, Eng., now has a license from CLUPAK, INC. to build machinery for making extensible paper. Clupak also has licensed SOCIEDAD AGRICOLA LIMITADED of Paramonga, Peru (W. R. GRACE & CO. subsidiary) to make extensible paper using bagasse, the stock chiefly used in Peru for paper making—it is relatively short fibered compared with pine kraft.

More expansion for packaging:

H. P. SMITH PAPER CO. has installed "airveying" (conveying by air) for moving its polyethylene stocks from rail cars to silos, and from silos to coating equipment. . . . By adding a third paperboard machine, complete with pulp processing system and additional raw material handling equipment, FIBREBOARD PAPER PRODUCTS CORP. has increased, by more than a third, the productive capacity of its San Joaquin, Calif. pulp and board mill.

THE DOW CHEMICAL CO.'s new plant at Plaquemine, La. is now in production. . . . A new H. B.

(Text continued on Page 18)

Complete Unit Skin-Packs, Blister-Packs, or Vacuum-Forms

Nothing shows your product sells your product like SKIN-PACK!

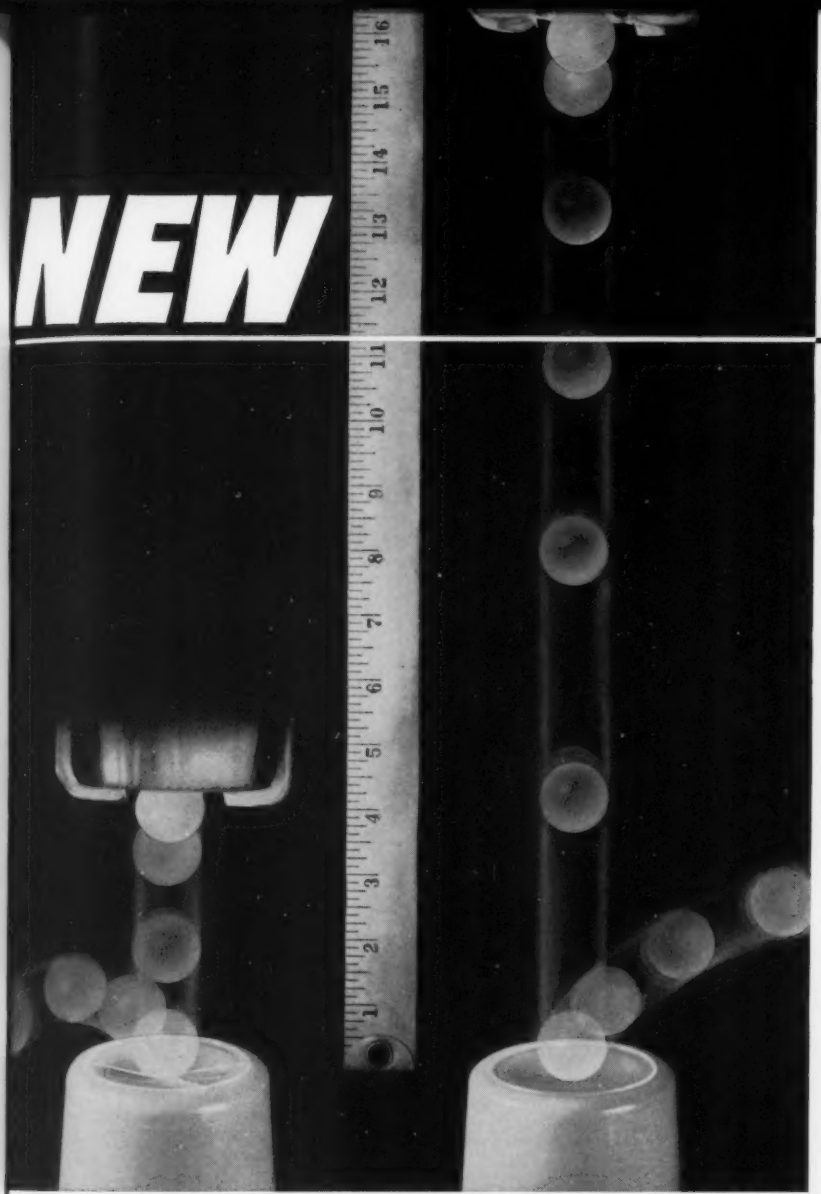
PROVE to yourself — right in your own plant — that the ABBOTT Automatic Skin-Pack unit can increase the sales-power of your product at lowest cost! Complete "package" ensemble includes Pre-Loading Table, Skin-Packaging Unit, and Cutting Table. All full-size production equipment, featuring fully automatic cycling, ready to add the fast-selling appeal that supermarkets and self-service outlets demand!

WRITE, WIRE, OR PHONE TODAY for full details on Abbott's remarkable 3-Month Test

ABBOTT PLASTIC MACHINE CORPORATION

7124 N. Clark St. • Chicago 26, Ill. • Phone: HOllycourt 5-1007

SALES-SERVICE OFFICES IN ALL PRINCIPAL CITIES



In standard laboratory "ball drop" test, regular medium-impact styrene (left) breaks under 4-in. drop, while new low-oriented styrene (right) takes ball dropped four times higher. Both samples were pre-chilled to 20° below zero F.

LOW-ORIENTED STYRENE MAKES THIN-WALLED CONTAINERS UP TO 4 TIMES TOUGHER!

Even at -20°F. this BAKELITE Brand medium impact styrene can give almost four times the impact strength of conventional medium impact styrenes. The secret—low-orientation.

IN standard laboratory specimens all good medium impact styrenes check out about the same. That's how they got their name. But in an injection molded thin-walled piece? A different story. Serious loss of impact strength has been found across the "lines of flow" set up in any injection process. Remember, the piece is exactly as strong as its weakest section.

Containers and snap-on lids made of low-oriented TMD-9020 by Parker-Kalon. Division of General American Transportation Corp.

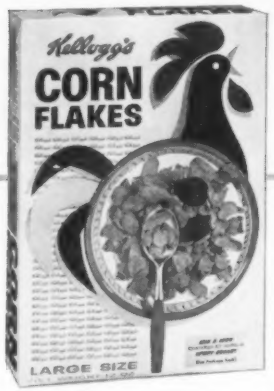
Until recently this strength loss was a fact of life we just accepted. But now, using BAKELITE Brand TMD-9020, a low-oriented medium impact styrene, you can take advantage of *all* the strength originally built into the material. You get the translucency, the economy of a medium impact styrene. And you can get almost four times the molded strength of conventional materials of this type, even at temperatures as low as twenty below zero!

Think what this means to the package designer and consumer. Products can often be identified without opening the package. And these packages take to the kind of rough treatment the more fragile see-through packages could never begin to withstand. Shoppers can handle them without special care, dump them in a shopping cart, use them again at home as often as they wish.

BAKELITE Brand medium-impact styrene TMD-9020. It's the forerunner of other low-oriented BAKELITE Brand styrenes soon to come in other impact-resistant grades. Get an idea of how low-oriented styrene will perform in *your* packaging. Write today to Dept. IV-101B, Union Carbide Plastics Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, New York. *In Canada:* Union Carbide Canada Limited, Toronto 12.

UNION CARBIDE

BAKELITE and UNION CARBIDE are registered trade-marks of Union Carbide Corporation.



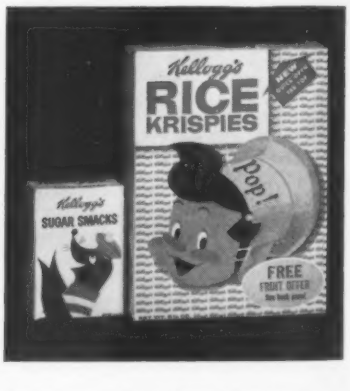
PACKAGING ALL-IMPORTANT IN KELLOGG SUCCESS

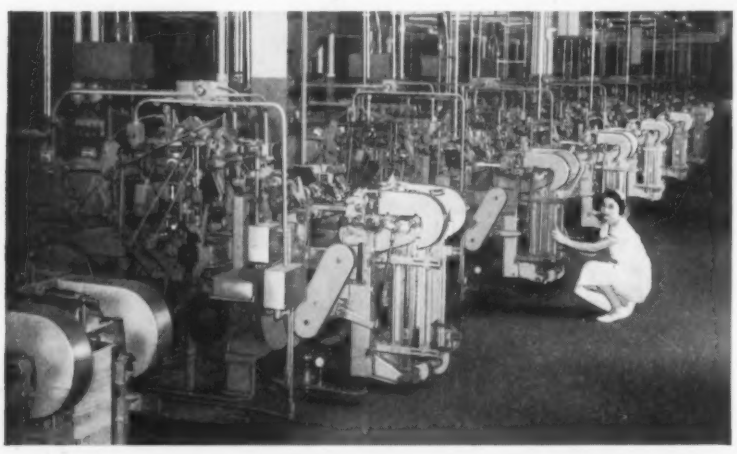
- Kellogg quick to up-date
- Signature alone remains unchanged
- Rely heavily on Pneumatic equipment

Kellogg has never been a stand pat organization when it comes to packaging. Traditionally they have been leaders in meeting changing times and conditions with appropriate "change of face" designed to give their products the competitive advantages of up-to-date shelf appeal and visibility. Kellogg packages have always been noted for their double duty effectiveness — serving as sales aids as well as protective product containers.

Kellogg's packaging methods naturally reflect Kellogg's progressive approach to this aspect of their production and merchandising. In Memphis, Kellogg's newest facility, as well as in other Kellogg plants, Pneumatic packaging equipment predominates. Memphis production of individual service packages is handled on battery arrangement of Pneumatic Package Maker combinations. The larger containers of Kellogg cereals are formed, lined, weighed and top sealed on adjustable lines of Pneumatic machines.

The strong emphasis on Pneumatic equipment prevails throughout their fifteen other Kellogg plants and branch installations around the world that supply more than a dozen different breakfast cereals to the United States and one hundred other countries. Such huge volume demands maximum operating efficiency to avoid product waste, time losses and maintenance expenses which could amount to critical figures. Pneumatic operating efficiency, flexibility and service is a Kellogg safeguard — one extremely important means of "profit protection" widely used by the foremost producers of many kinds of packaged and bottled products. Good packaging for you, too, may well begin with Pneumatic.





Several Small Double Package Maker combinations in operation at Kellogg's modern plant at Memphis, Tennessee.

PNEUMATIC SCALE CORPORATION, LTD., 77 Newport Avenue, Quincy 71, Mass. Sales Offices: *New York; Chicago; Dallas; Rochester.* Agents: *Fred Todt Company at Los Angeles, San Francisco and Seattle. Rockwell Pneumatic Scale Ltd., Edgware Road, London, N. W. 2, England, O. R. M. A., Paris 8, France; Carbert Manufacturing Co., Division, Cambridge, Mass.; Delamere & Williams Co., Ltd., Toronto.*

Planned Packaging moves merchandise

Sold and still selling!

The corrugated container—workhorse of mass distribution—has long been known for its excellent product protection. Now it's fast becoming the Cinderella of packaging. Attractive, tinted background designs—even four-color half-tone printing, pioneered by Packaging Corporation of America—are transforming drab, rubber-stamped containers into eye-catching traveling billboards that sell their contents at every opportunity.

The skillful combination of art and package design is but one of countless ways in which Packaging Corporation of America's concept of Planned Packaging, implemented through integrated national facilities, produces better packaging . . . more sales. Whether your requirements are large or small, regional or national, we welcome the opportunity to help you.

Packaging Corporation of America

1632 CHICAGO AVENUE, EVANSTON, ILLINOIS

Cartons • Containers • Displays • Egg Packaging Products • Molded Pulp Products • Paperboards

MOSINEE MAKES MAGIC WITH PAPER

Char Test favors

MOSINEE Flame-Resistant Papers

- Mosinee flame-resistant papers consistently test less than the minimum requirements of 4½" char when subjected to U.S. government specification test methods.
- Special flame-resistant process, developed by Mosinee laboratories, can be applied to many of our papers.
- Ideal for paint arrestors, furnace filters, insulation, drop cloths, covers for stored goods, and packing and wrapping papers.
- You get the same high Quality from roll to roll . . . from carload to carload.

MOSINEE
PAPER MILLS COMPANY
MOSINEE, WISCONSIN

FREE—DATA FILE AND PAPER TERMS DICTIONARY
Write Dept. PA-2

FULLER CO. adhesives manufacturing plant is now open in Toronto, Ont. . . . PACKAGING CORP. OF AMERICA is negotiating to acquire WORCESTER MOULDED PLASTICS CO. of Worcester, Mass.

The associated companies of CONNECTICUT CONTAINER CORP. and KRAFT CORRUGATED CONTAINERS, INC. have established a division for molding of expandable polystyrene. The new division, HOLYOKE CUSTOM MOULDED PRODUCTS, INC., will enable them to combine corrugated and polystyrene for packaging.

ATKRON, INC. has relocated and consolidated all its operations in its new plant and general offices, Northhampton, Ohio. . . . To increase production of its closure and plastic tube divisions, THATCHER GLASS MANUFACTURING CO. plans a $1,200,000 expansion program for its Muscatine, Iowa plant.

The Weslaco, Tex. corrugated sheet plant of CROWN ZELLERBACH CORP.'s GAYLORD DIV. is in production. . . . FAIRMOUNT GLASS WORKS INC. has started to process "applied color label" (enamel fired and hardened on glass) containers at the rate of 600/day. . . . CLIMAX PRODUCTS DIV. of LODGE & SHIPLEY CO. has acquired all manufacturing rights for the packaging machinery known as "automatic case packer" from W. F. & JOHN BARNES CO.

A new company, MARYLAND CORRUGATED BOX CO., INC., has been organized to manufacture a complete range of corrugated shipping containers, specialties, die cut items, and so on. . . . W. R. GRACE & CO. plans a major plastics expansion program for its polymer chemicals division. Besides increasing its Baton Rouge, La. production facilities by 50 per cent, W. R. Grace will add a complete range of polystyrene resins and low and medium density polyethylene resins to the product line of its polymer chemicals division.

(End)

New, improved, heavy duty imprinter —marks up to 7500 packages an hour!

The Pitney-Bowes Model 4800 will imprint flavors, prices, weights, sizes, grades, quantities, codes, ingredients, guarantees, specifications – on cartons, bags, wrappers, tags, envelopes, shipping cartons – as they are needed, for the job lot, special order, daily output. Packaging inventories can be reduced, and waste of unusable pre-printed items avoided. The 4800 can also be used to imprint advertising, booklets, envelopes, etc. Offers major savings in costs, time and labor.

- The 4800 is versatile – prints on stock up to 3/16 inch board; paraffined stock, coated paper or varnished board, foil, absorbent materials. Handles sizes up to 18 by 18 inches; has a printing surface of 4 by 18 inches; uses rubber mats or type. Fast drying ink that requires no mixing gives high quality impression. Registration is accurate. Can be set without tools. And can be run by anybody with little instruction.
- Continuous feed, with automatic shutoff. Controls and piece counter in one handy panel. Liquid inker can be filled without stopping machine. Easy to register imprint. Double detector prevents two pieces feeding at the same time. And rugged construction gives the 4800 a long, useful, low-cost life.
- For details on this amazing new imprinting machine, call any Pitney-Bowes office. Or send coupon for free illustrated booklet and case studies.

Pitney-Bowes
IMPRINTING
MACHINES

Made by the originator of the postage meter . . .
139 offices in U.S. and Canada.

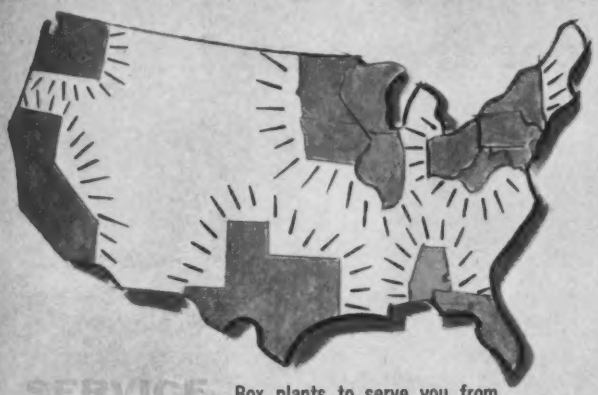
PITNEY-BOWES, INC.
7726 Crosby Street,
Stamford, Conn.

Send free illustrated booklet and case studies on the Imprinter to:

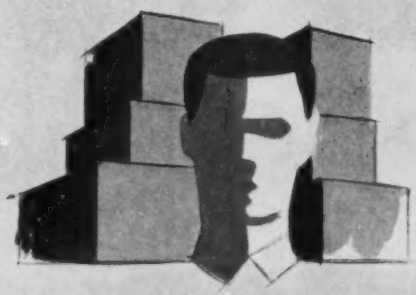
Name _____

Address _____

YOU'LL LIKE DOING BUSINESS W



Box plants to serve you from coast to coast, in all major industrial areas.



Packaging engineers design the container that's perfect for your product.

ST. REGIS CONTAINERS · COVER THE COUNTRY ·

18-step quality-check tests liner-board, corrugated board and final box.

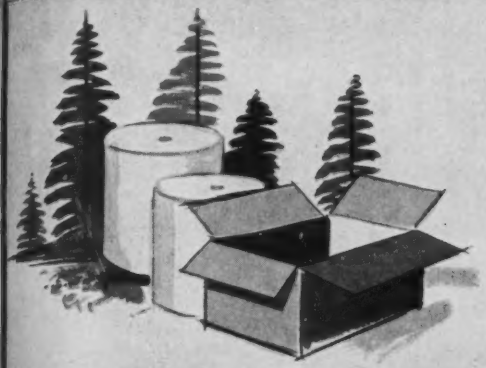
It all adds up. You get the most of the best from St. Regis. Nation-wide design and production facilities are at your service—with experience in all product areas.

Whatever you make, St. Regis will create the corrugated box best suited to its shipping, storing, stacking, handling and selling. Every box the finest that money can buy . . . checked through rigorous quality control every step of the way.

So when you need corrugated boxes . . . simple or complex . . . call on St. Regis. Use *our* imagination.

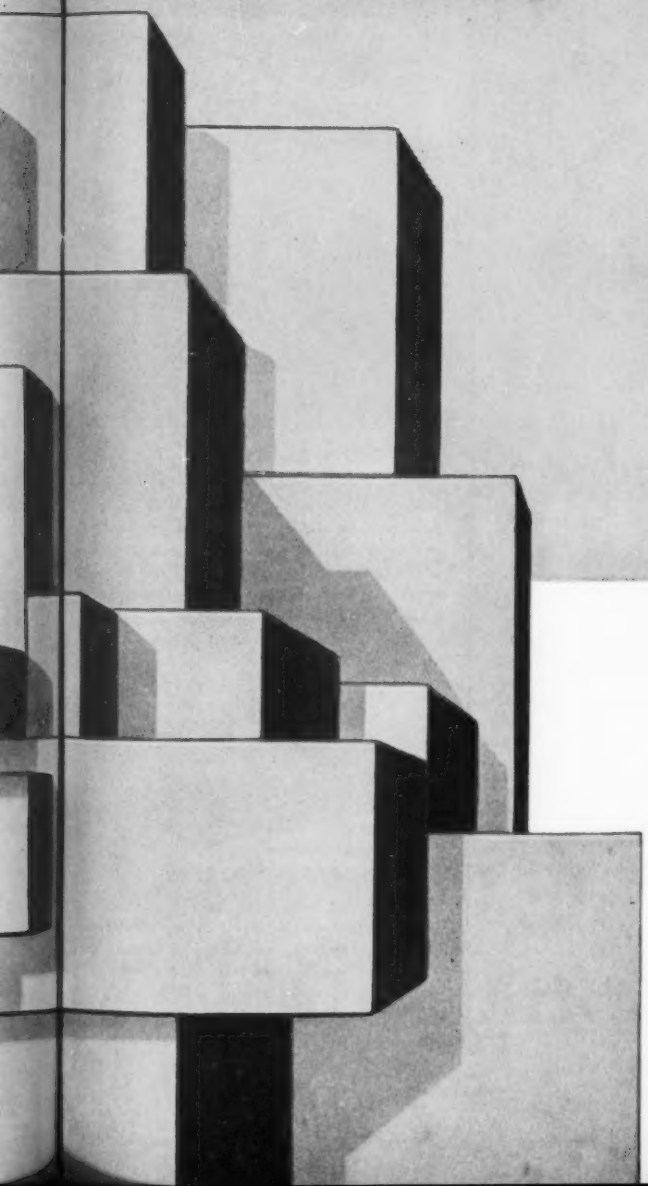
Anything goes . . . in a St. Regis container!

SS WITH ST. REGIS®...



INTEGRATION From St. Regis tree to St. Regis box—rigid quality control all the way.

SPECIALIZATION Research in box design and materials for more efficient packaging.



From a nationwide family of fine St. Regis corrugated plants, you'll gain in many ways: Well-seasoned, imaginative designers serve you on both local and national levels • Consistent quality is assured from St. Regis tree to St. Regis box • New packaging materials continually emerge from a fully staffed research department • And you'll enjoy working with the friendly, experienced people who *are* the St. Regis Container Division!

CONTAINER DIVISION

St.Regis PAPER COMPANY

150 EAST 42nd STREET, NEW YORK 17, N.Y.

PLANT LOCATIONS: BIRMINGHAM, ALA. • FULLERTON, CALIF. • SALINAS, CALIF. JACKSONVILLE, FLA. • CHICAGO, ILL. • DUBUQUE, IOWA • HAGERSTOWN, MD. • MINNEAPOLIS, MINN. BUFFALO, N.Y. • ALBANY, N.Y. • CANTON, OHIO • CLEVELAND, OHIO • COSHOCTON, OHIO • NEWARK, OHIO • CRAFTON, PENNA. • MT. WOLF, PENNA. • PITTSBURGH, PENNA. • DALLAS, TEXAS • GARLAND, TEXAS • HOUSTON, TEXAS • TACOMA, WASH. • GRAFTON, W. VA. • MILWAUKEE, WIS.

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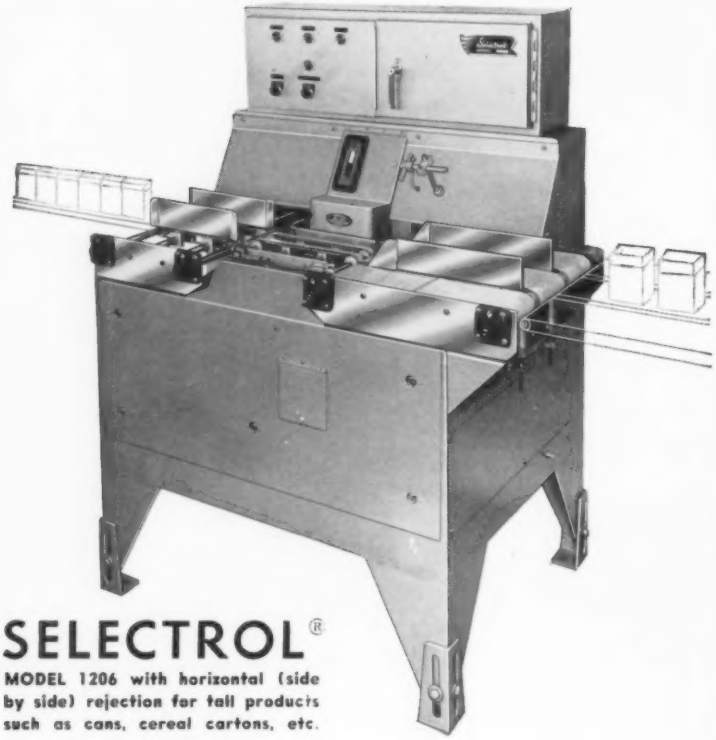
Exact Weight's New Automatic Checkweigher

Latest electronic controls

New engineering features

New compact size



SELECTROL®

MODEL 1206 with horizontal (side by side) rejection for tall products such as cans, cereal cartons, etc.

This new Selectrol checkweigher automatically weighs, classifies and sorts at speeds up to 120 items per minute, depending on size and weight of object. Rejection accuracy is 2/10 of one percent of the weight of the commodity at maximum speed.

New Selectrol features include compact size that requires minimum space in a conveyor line . . . and simplified circuits. Electrical controls are mounted above the conveyor line for easy accessibility.

Selectrols are made by Exact Weight, a leading manufacturer of job-engineered scales for 45 years with experience gained through hundreds of checkweighing installations during the past 18 years. For complete details, write for Bulletin 3377.

Exact Weight SCALES

THE EXACT WEIGHT SCALE CO.

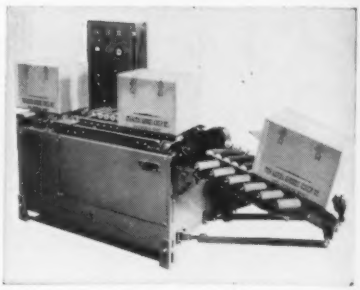
912 W. FIFTH AVE., COLUMBUS 8, OHIO

In Canada: 5 Six Points Road, Toronto 18, Ont.

Sales and Service Coast to Coast

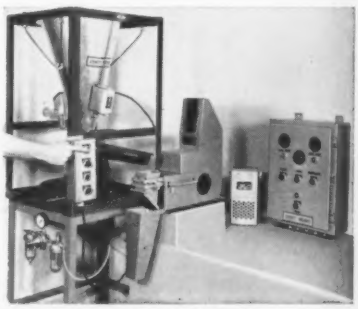
Find us in your local "Yellow Pages"

OTHER EXACT WEIGHT EQUIPMENT



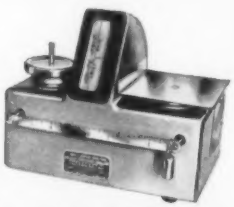
CASE AND BAG CHECKWEIGHER

Model 1250 Selectrol designed for checking bags, cartons and cases from 20 lbs. to 100 lbs. Speeds to 30 products per minute; rejection accuracy 1/10 of one percent at maximum speed. Can be supplied with or without rejection equipment. Write for Bulletin 3376.



PRECISION AUTOMATIC NET WEIGHING MACHINE

Model 4601NW for weighing dry, free-flowing products with accuracies of 1/10 grams on quantities below 10 grams and one percent accuracy on quantities of 10 grams and above. Models with capacities from 50 grams to 500 grams. Write for Bulletin 3363.



SHADOGRAPH® SCALES

Extremely fast with high degree of visible accuracy for use in all kinds of repetitive production weighing operations. Available in 35 models in capacities from 2000 milligrams to 100 lbs. Write for Bulletin 3333.

Transparent or Opaque...

and a host of other characteristics with Glassine & Greaseproof protective packaging. One of the beauties of packaging with Glassine and Greaseproof papers is their versatility. Your protective packaging can be tailored to exactly your requirements and at low cost. The excellent basic grease and oil resisting properties of these papers are available not only in transparent, translucent, or opaque grades, but also in a wide variety of colors and basis weights. Their basic functional features and compatibility with other materials make them the ideal base for conversion through coating, waxing or laminating combinations to provide heat seal, water-vapor resistance, gloss and release properties.

They also take printing beautifully, and handle extremely well on high-speed packaging equipment.

Write for complete information.

GLASSINE GREASEPROOF

Rhinelander

PAPER COMPANY • RHINELANDER, WISCONSIN

Division of St. Regis Paper Company

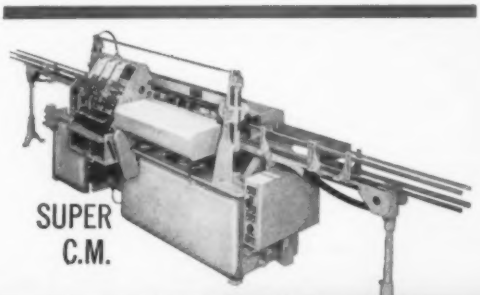
Plastic or glass... only the WORLD Super C.M. offers 100% labeling versatility

New container shapes, in plastic or glass, put labeling equipment to the test! Merchandisers want basic container appeal on the retail shelves and they go all-out to get it from packaging designers.

With these constant shifts in shape will you be able to cope with labeling changes, too?

The WORLD Super C.M. labeler guarantees you that protection . . . You can apply front, back, shoulder, bias or full wrap-around-neck labels *NOW!* Moreover, you'll be able to accommodate future label changes *as* well as container changes . . . at speeds compatible to the rest of your packaging line.

With tomorrow in mind, get the full facts on Super C.M. performance today. You'll be glad you did.



WORLD LABELERS

ECONOMIC MACHINERY COMPANY • WORCESTER 3, MASS. / Division of Geo. J. Meyer Manufacturing Compan

For more information write direct to Manufacturer

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Schlage Locks found the key to "scratch-free" shipping

kimpak®

INTERIOR PACKAGING

The vital cushion between profit and loss!

No matter how it's shipped, you can't smash or scratch a Schlage Lock. Schlage solved this shipping problem with KIMPAK—and so can you.

KIMPAK soaks up shocks that cause breakage—insulates against nicks, dents and scratches. And KIMPAK is easy to work with—clean, light and supple.

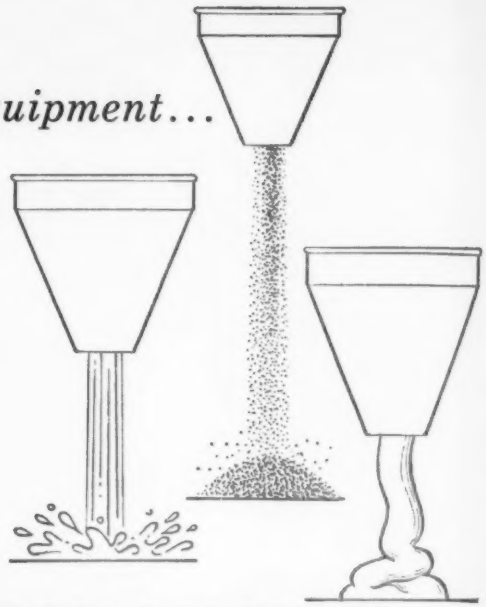
What can we protect for you?

KIMPAK is stocked for immediate delivery throughout the United States and Canada by leading coarse paper merchants and packaging supply firms.

Kimberly-Clark PRODUCTS

FREE... trial supply of KIMPAK—enough to pack whatever you ship—at no obligation. Please phone us COLLECT! Neenah, Wisconsin, PArkway 2-3311. Ask for Bob Brown.

In filling and packaging equipment...



THERE'S ONLY ONE THING FINER THAN SWEDISH CRAFTSMANSHIP

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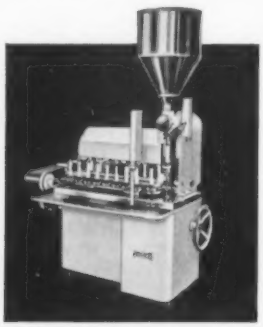
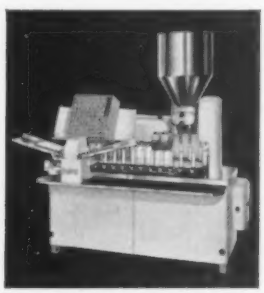


GAB automatic tube filling and closing machine packages liquids, semi-liquids and stiff pastes at speeds as high as 3000 an hour. Complete filling, with no air bubbles or pockets. "No-tube, no-fill" efficiency. Takes tubes up to 1½" in dia., 7¼" in length, 1¾"x 8" on special order. Tube-cleaning, cap-tightening, blow-off and coding device standard equipment.



GAN, "big brother" of the GAB, fills and closes up to 7000 units an hour with one operator. Automatic tube feed, photo electric tube register and dual filling nozzles. Tube discharge can be tailored to virtually any cartonning set-up. Handles tube diameters up to 1½", lengths to 7¼". Like GAB, fast changeover from size to size, product to product.

GAP heat sealer works well in combination with the GAB ... enables you to seal perfectly packages of either polyethylene or p.v.c. plastic. Easy to hook up to the parent machine. And on the GAP, precision thermostats maintain proper sealing temperatures for whichever plastic material you work with, whether production is long-run or short.

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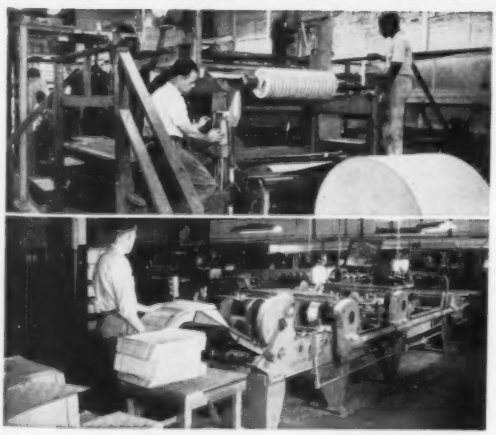

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Martin J. Spalding is a graduate of Lawrence College with a B.S. degree in chemistry and has done graduate work in industrial relations at Loyola University. He joined Murine in 1950 as a chemist and was promoted to plant manager in 1953. Mr. Spalding is a member of American Chemical Society, American Pharmaceutical Association, and American Management Association.

Keeping PLASTIC bottles under control

By Martin J. Spalding,
Plant Manager,
The Murine Company, Inc., Chicago

Changing from glass to small, lightweight plastic bottles, and still maintaining a line speed of 120 bottles/min., calls for new handling techniques. Following the bottles through cleaning, filling, capping, inspecting and cartoning, Mr. Spalding pins down the problems by showing how proper orientation (even to adapting standard machinery with special devices), preventing bottle drag, and the right bottle shape keep a line at top efficiency.

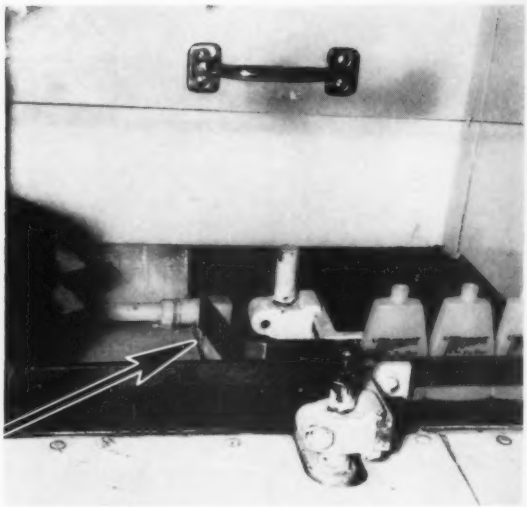
Our experience with packaging small, lightweight polyethylene bottles with a liquid eye solution led us to several techniques which help make our packaging line operation a success.

If the key to this could be summed up in one word, the word is "*orientation.*" Other factors deserve attention, but correctly positioning bottles during cleaning, filling, and capping is particularly significant.

Reducing friction is another important point in running these bottles. They tend to "hang up" or drag at every point of contact all along the packaging line. Reducing this friction at all points of contact allows us to run bottles at 120/min. without their climbing, bouncing, tipping, or hanging up.

The "standard size" bottles we use are 2-9/16 in. tall, 1-7/16 in. wide at the base with a tapered shoulder, and a depth of 11/16 in. at the widest part of the base which curves to 7/16 in. at the neck, the narrowest point. The front and back panels curve convexly, the tapered sides are flat, and the top and bottom are flat. (The drawing above is actual size.) Being tall and thin, the bottles tip over easily when empty. Our "large-size" bottles are the same

1 FROM HOME-MADE HOPPER, operator manually feeds empty plastic bottles to packaging line. Bottles are too light and oddly shaped to unscramble, orient, and feed automatically at 120/min.



2 BENT BRASS BAR (arrow) beside opening in guide rail at air-cleaner discharge, bumps any tipped bottles and prevents their jamming under guide rails—bottles fall away from moving conveyor.

basic shape but have proportionately larger dimensions. We run both bottles on the same line.

Feed Line By Hand

Our packaging line operation begins at a home-made holding bin or hopper. We dump empty bottles from corrugated shipping containers into the open top of the hopper. Two operators pick them out of the opening at the bottom and set them upright on the conveyor line with the curved front and back panels running parallel to the line of travel. (See Fig. 1.)

As they remove bottles from the hopper, the rest of the bottles slide down to the bottom opening. This is right behind the line and within easy reach. We feed bottles manually to the packaging line because they are too light and oddly shaped to economically unscramble, orient, and feed automatically at our line speed of 120 containers/min.

The bottles move along a powered 3½-in.-wide steel-plate conveyor belt, and between steel guide rails. We space the two guide rails on either side of the bottles as closely together as possible (without squeezing them) so that the bottles move along the line without tipping over.

Jam At Cleaner

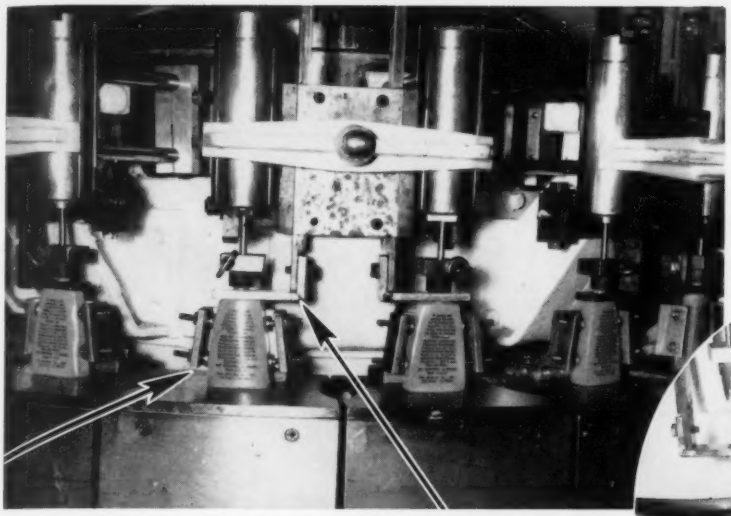
The bottles move on to our 12-head Pneumatic Scale vacuum cleaner which removes dust, etc., and feeds them back to the line. This was an area of special difficulty in getting the bottles to run smoothly.

Our plastic bottles used to hang up or stick in the cleaning unit; just a slight delay in their dropping from the cleaning heads onto the platform which carries them back to the line meant jam-ups on the line because of bottles being crushed in the cleaner. Unless a bottle falls cleanly away from the cleaning heads, it will not move back onto the line properly and will fall over—jamming up under the guide rails on the conveyor.

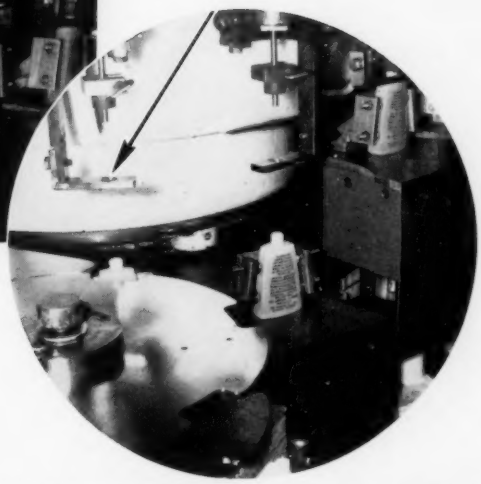
To remedy this, we enlarged the device which holds the bottles in the cleaner. There is a small bar with a circular opening in it which guides the bottles to the cleaning nozzles. We enlarged this opening 1/16 in. This eliminated the friction which was holding the bottles because of too close a fit and causing the delay in a bottle dropping away from the cleaning head.

We also cut a small section (about 5 in.) out of the back guide rail leading from the discharge side of the cleaner to the next station. (See Fig. 2.) We brazed a small tab or plate of brass to this guide rail and bent it out and away from the moving conveyor line.

This forms a bumper guard to prevent tipped bottles from getting



3 U-SHAPED BRACKET (left arrow) on each platform, holds bottle during filling. Set screws are adjusted to squeeze bottle so front and back bow slightly outward, thus preventing vacuum from collapsing bottle.



4 HOLE IN FLAT STEEL BAR (arrow) fits over bottle neck as bottle is raised, thus guiding it into correct position (right arrow in Fig. 3), and holding it there, for filling.

caught under the guide rails which are raised slightly above the conveyor. The opening we made by removing the section of guide rail and attaching the brass plate bumps the tipped bottles off the line before they cause a jam.

Another thing we do to reduce friction or drag is to use a silicone spray on the conveyors, infeed mechanisms, and every other machinery part that contacts the bottles. This also helps keep the bottles running smoothly, quickly, and without jamming up.

Adapt Filler

Next, the bottles move to our modified 18-head, rotary-type Pneumatic Scale vacuum filler. Although basically standard, our filler was modified by its manufacturer to handle our plastic bottles. A three-dimensional U-shaped bracket was mounted on each platform, to hold a bottle during filling (see Fig. 3). "Legs" of the brackets taper outward (in the vertical dimension) to match that of the bottle sides. Two adjustable set screws in each bracket leg actually contact the bottle sides.

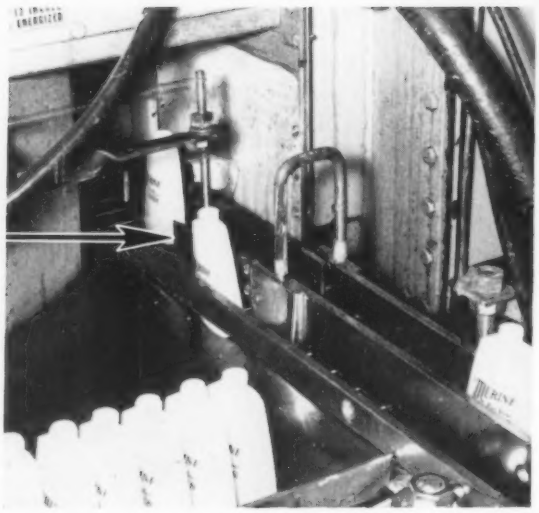
As a bottle moves onto the filler platform, it is forced between the two pairs of set-screws on each side of the steel holder. The set-screws on either side of the bottle squeeze it slightly and bow the already curved front and back panels outward. Without this, the flexible plastic bottles tend to collapse under the vacuum drawn on them during the filling. The bowing caused by the set-screw device, however, adds enough rigidity to the bottles to prevent their collapse.

Another attachment is a flat steel bar with a round opening through it which fits over the neck of the bottle. (See Fig. 4.) This guides the bottles into the correct position under the filling tubes. These are key points in our success with filling plastic bottles. The set-screws and guide bar correctly position each bottle and keep it from collapsing in the filler.

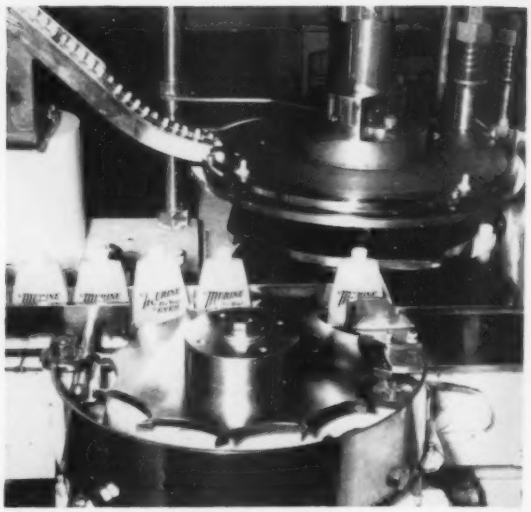
Draw Low Vacuum

We fill our standard-size (5-dram) bottles at 120/min. under a vacuum of 4 in. and the large (12-dram) bottles at 100/min. under a vacuum of 2 to 3 in. We can draw such low vacuums because we keep the product level in the filler reservoir as close as possible to the liquid level in the bottles.

This way we do not have to siphon the liquid up to a high level, and we can fill efficiently and fast by using a low vacuum. That is, by keeping the level of the liquid in the filler reservoir within 6 to 12 in. below the level of the liquid in the filled bottles, we do not have to draw a high vacuum to bring the liquid up into the filling heads



5 "GATE" (arrow), located at discharge end of, and controlled by, fill-height detector equipment, switches all underfilled bottles to side conveyor. Underfills are run through filling operation again.



6 TWO SIMILAR MACHINES, modified to handle odd-shaped plugs and long, tapered caps, plug and cap filled bottles. Then, two-position pocket wheel scoops bottles rapidly from capping chucks.

and can still fill accurately with few underfills at 120 bottles/min.

Prevent Bottle Collapse

By preventing the bottles from collapsing during the filling operation (which would happen with a high vacuum draw), we insure an accurate fill. If a bottle does collapse or bow inward under the vacuum, the volume of the bottle decreases and the liquid spills over. This results in an underfill when the bottle returns to its normal shape after vacuum releases.

We recommend either a positive displacement type of filler or the pressure-vacuum type filler for plastic bottles. Because we have to compensate for the collapsing effect of drawing a vacuum by having the set-screw devices, our filling operation is not entirely satisfactory. It takes extra work during changeovers to adjust the 72 set-screws to the exact positions to hold the bottles correctly. This is time-consuming, and therefore costly, when changing from standard size to large bottles and vice-versa.

With either of the other two types of filling equipment, we would eliminate this extra work. If we pumped the product by pressure, we could get by with no vacuum drawn on the bottles and still fill at the same speed without taking extra care in adjusting the fixtures for holding the bottles.

Fill Detector

After filling, the bottles run through our General Electric fill detector unit which checks the level of the liquid in each bottle. If a bottle happens to be underfilled, the detector actuates a bar device in the conveyor line guide rails. This switches the bottle from the main line of flow to a side track. (See Fig. 5.) Underfilled bottles are run through the line again.

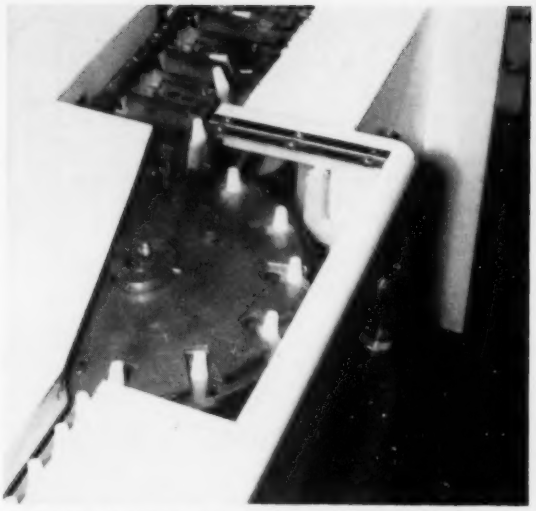
Modify Plugger, Capper

The next two operations in the packaging line are plugging and capping the filled bottles. We use similar equipment for both jobs. The two machines operate on the same principles, and both machines were modified by the manufacturer to suit our particular needs.

Plugs for one operation and caps for the next are fed by standard Peco vibratory feeders to our two units of Consolidated plugging and capping equipment. The bottles for each of these two operations move to the equipment through a 12-pocket star wheel. (See Fig. 6.)

The bottles pass into the machine and under one of the four rotating chucks on each machine which either puts in a plug or screws on the cap after bottle is plugged. The chucks on each of these machines are modifications of the standard ones. The equipment had

7 FLOURESCENT LIGHT, mounted at convenient work height above and behind conveyor, allows two operators to inspect every bottle for package defects and/or impurities in product.



8 CIRCULAR INFEED DEVICE feeds finished bottles into cartoning equipment. Designed for particular bottle shape, device puts bottles into pockets of cartoner, with controlled, positive motion.

to be adapted by its manufacturer from a "standard" design to one which handles our oddly shaped plugs and long, tapered caps.

Both machines discharge the bottles to a two-position pocket wheel which returns them to the conveyor line. These wheels are synchronized with the rotating chucks in such a way that, as soon as the bottle is plugged or capped, the rotating wheel scoops it away from the chuck and feeds it back to the line.

Visual Inspection

After capping, the bottles move along to an inspection station where two people pick up each bottle and visually inspect all for defects in the packages or impurities in the eye lotion. The bottles, although yellow in color, are translucent and the inspectors can see through them when they hold them in front of a fluorescent light fixture we mounted at a convenient work height just above and behind the line. (See Fig. 7.)

Special Cartoning Device

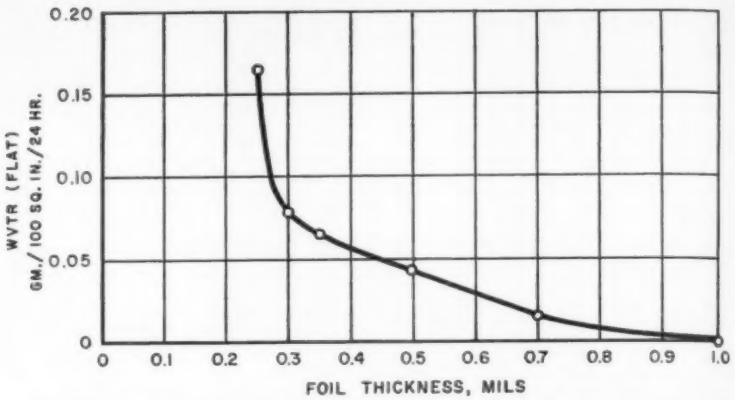
After inspecting filled and capped bottles, they return them manually to another conveyor track and the bottles move along to our standard Redington cartoner. We have a specially designed circular infeed device on the cartoning machine which positions the bottles in the cartoner pockets and gives a positive, controlled feed. (See Fig. 8.)

After automatic cartoning, the bottles move to a station where three operators place six standard-size bottles (or three large-size bottles) in a fibreboard display tray. Filled trays move along to our overwrapping equipment. The overwrapped unit package is then manually placed into a corrugated shipping case and transported to storage prior to shipment.

Practical Design Important

After we designed a new bottle for our first venture into plastic bottle packaging, we asked our machinery suppliers if they thought the new bottle would run well on their equipment. Because of its unusual shape (with sharp-angled corners at the bottom of the bottle and tapered sides), the suppliers said this bottle would probably tend to climb up the side of the bottle in front as they moved along the line.

So, we modified the shape of the bottle to its present configuration—squared off at the bottom corners with the parallel sides going up perpendicular from the bottom for about ½ in. and then tapering off to the top. With the squared corners and flat vertical sides, the bottles do not climb up one another in the narrow guide channels along the line. *(End)*



1 WVTR's for aluminum foil Alloy 1145-0 at 100°F., 96 per cent R. H. Thin gauges are good moisture barriers, but they need support of other materials, due to mechanical reasons.

Part I—
Laboratory test data

WVTR of aluminum foil laminates

How different types and weights of papers and adhesives affect water-vapor transmission rates of foil laminations

By Mike A. Miller, *Chief,*
and J. E. Stillwagon and D. B. Strohm, *Research Engineers,*
Foil and Packaging Division, Alcoa Research Laboratories,
Aluminum Company of America,
New Kensington, Pennsylvania

Laminating adhesives and papers—types and weights, and combinations—each have an effect on the WVTR—water-vapor transmission rate, once known as MVTR—of foil laminations, according to the authors. Discussing these, they compare various materials and tell how and why they can cause different WVTR's. Next month, the authors discuss testing laminations using actual products. They also give the modified procedure Alcoa uses, and feels is better, for testing WVTR of a foil lamination.

Preventing undesirable conditions from developing within a package made of a foil lamination involves the impermeability of gases, liquids, and vapors to the foil. Also, it introduces problems of WVTR, even though aluminum foil is effective in preventing sogginess, overdryness, loss of vitamin content, and rancidity.

WVTR problems have attracted the attention of researchers in laminated foils for many years. Some of the questions which come

up frequently concerning foil laminations are:

1. What factors determine WVTR characteristics?
2. What effect does the type and weight of paper have, all other factors being constant?
3. What is the effect of the type of adhesive?
4. What is the effect of the adhesive weight?
5. What is the effect of combining nip pressure?

Much data pertaining to WVTR of various basic packaging materials are available in trade and technical publications and in the technical literature of suppliers of basic materials. We have collected and organized data on combinations of the materials used in packaging, particularly on those laminations including aluminum foil in the structure.

Mike A. Miller has a B.A. in chemistry and physics from Central Michigan College of Education, and a Ph.D. from University of Michigan. He joined Alcoa as research chemist in 1936, and was research metallurgist from 1943 to 1945. For 12 years he was assistant chief of process metallurgy prior to his present appointment. Author of a number of technical publications, Dr. Miller has contributed approximately 36 patents to the aluminum industry. A civilian consultant to the Manhattan Atomic project during World War II, he is a member of American Chemical Society, American Society of Metals, American Welding Society, TAPPI, and Scientific Research Society of America.

James E. Stillwagon is a 1952 graduate of Villanova University where he majored in chemistry. He joined Alcoa in 1955, following his discharge from the Marines. Mr. Stillwagon began his career as research engineer in the research laboratory. In 1960 he was appointed development engineer at the process development laboratory. He is a member of American Chemical Society.

D. B. Strohm is a 1925 graduate of Philadelphia College of Pharmacy and Science. After working as chief chemical engineer for York Safe and Lock Co., he joined Alcoa in 1937 at its Edgewater, N.J. plant as supervising chemist for the packaging laboratory. In 1957, he was transferred to New Kensington where he assumed his present position. Mr. Strohm has co-authored several technical articles on aluminum foil and its various properties and uses for packaging.

Must Test Whole Structure

We have found that the WVTR of laminated structures, especially those containing aluminum foil, ordinarily cannot be determined from that of the individual components. This is especially true of creased laminations. Thus, insuring accuracy requires finding the actual gain, or loss, of moisture through the *whole* laminated structure.

In this article, we will explore the five questions above, considering the WVTR through various laminated structures potentially useful for packaging applications. The three components of the structures that we examined are paper, adhesive, and aluminum foil. All paper weights and dry adhesive weights are based on a 3,000-sq.-ft. ream (24x36 in.–500).

PAPER

The data in Table I illustrate the susceptibility of plain and waxed papers to moisture penetration. WVTR values for the several plain papers in their flat form range from about 130 to as high as 465 gm.

Creasing Raises WVTR

Examination of waxed papers shows WVTR values ranging from 0.5 to over 1.25 gm. in the flat condition, and about 10 gm. in the creased condition. These data show that creasing may cause rupture

TABLE I

WVTR THROUGH SEVERAL PLAIN AND WAXED PAPERS

Paper	Average WVTR* Flat	Creased
17-lb. HWS Mg	299.7	--
25-lb. Bleached glassine	131.3	--
25-lb. Opaque glassine	228.7	--
25-lb. Pouch paper	291.0	363.2
30-lb. Natural Mg kraft	342.2	--
30-lb. Opaque foil laminating	357.9	--
30-lb. Groundwood	465.2	--
35-lb. Cigarette paper	353.3	396.0
45-lb. White laminating stock	345.1	--
70-lb. Water repellent A	--	133.8
70-lb. Water repellent B	--	164.9
70-lb. Water repellent C	--	234.9
29-lb. Wax-impregnated glassine	0.8	--
26-lb. Waxed both sides (11.6 lb. wax)	1.3	10.5
29-lb. Waxed both sides (14.9 lb. wax)	0.5	10.1

*Gm./100 sq. in./24 hr. at 100°F., 100% R.H. Actual weights determined to fourth decimal point are rounded off to second decimal point.

TABLE II

WVTR THROUGH SEVERAL WAX-LAMINATED PAPERS*

Structure	Wax (lb./3,000 sq. ft.)	WVTR† Flat	Creased
Loaded sulfite 40/glassine 30	6.0	0.10	0.95
Greaseproof 30/sulfite 30	11.8	0.36	0.42
Opaline 40/greaseproof 40	8.4	0.44	0.67
Loaded sulfate 40/greaseproof 40	11.7	0.52	0.73
Loaded sulfite 40/glassine 40	5.2	0.66	0.88
Opaline 40/greaseproof 40	6.8	0.83	1.33
Greaseproof 30/tissue 20	5.6	0.85	1.06
Loaded sulfite 40/sulfite 40	6.5	1.03	1.88
Opaline 40/greaseproof 40	7.3	1.17	1.47
Opaline 40/tissue 20	9.0	1.44	2.56
Greaseproof 30/sulfite 40	5.0	2.40	3.00
Opaline 40/sulfite 30	2.7	6.30	7.10
Opaline 40/bleached kraft 40	2.1	10.00	11.40
Glassine 40/glassine 40	0	10.50	--
Greaseproof 40/glassine 40	0	14.80	--
Greaseproof 40/greaseproof 40	0	18.50	--

*"Report on Moisture Vapor Transmission of Wax Laminates," Package Magazine, Tudor Press, London, Oct. 1959, pp.58-59; recalculated from British units.

†Gm./100 sq. in./24 hr. at 100°F., 100% R.H. Actual weights determined to fourth decimal point are rounded off to second decimal point.

TABLE III

Effect Of Paper On WVTR Of Lamination To 0.00035-In. 1145-0 Aluminum Foil Using Rubber Latex Adhesive Code P-1 And Casein-Neoprene Adhesive Code B-1

Paper	Adhesive (lb./3,000 sq. ft.)	WVTR* Flat	WVTR* Creased
20-lb. Foil laminating paper	1.5 B-1	--	0.10
25-lb. Bleached kraft	1.2 B-1	--	0.19
30-lb. Groundwood	1.0 B-1	0.00	0.54
17-lb. HWS Mg	1.1 P-1	0.00	0.12
30-lb. Sulfite-sulfate	2 P-1	0.00	0.17
45-lb. Laminating paper	1.5 P-1	0.00	2.73

*Gm./100 sq. in./24 hr. at 100°F., 100% R.H. Actual weights determined to fourth decimal point are rounded off to second decimal point.

of the wax and/or paper, resulting in the high WVTR values.

Wax laminating lowers the WVTR through various papers. Table II consists of some British data which show the effect of wax in wax-laminated paper structures. The values are not only a function of the type and weight of paper, but also of the weight of the wax. For the structures in the flat condition, the WVTR values range from 0.1 to 10 gm.; for the creased condition, from 0.4 to 11.4 gm. Again, note that there apparently must be some fracturing during creasing.

ALUMINUM FOIL

Fig. 1 shows the plot of the average WVTR versus thickness for aluminum foil Alloy* 1145-0 in the flat condition. For all practical purposes, short of mechanical damage to the foil, 0.001-in. material has zero WVTR. Even for 0.0003-in. foil, the average WVTR value is only 0.008 gm./100 sq. in./24 hr. at 100°F. and 96 per cent R.H.

*Aluminum Alloy 1145-0 is nominally 99.45 per cent aluminum in the annealed or dead-soft condition. This is the standard packaging converter alloy, unless otherwise specifically indicated.

Needs Support

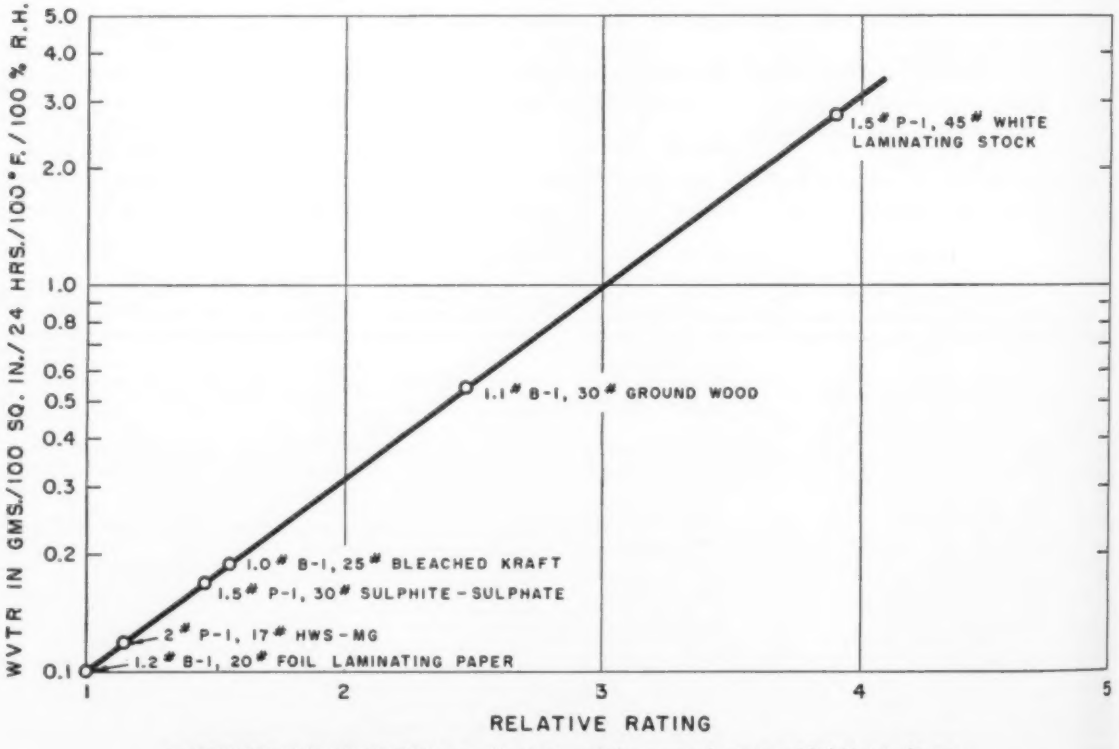
Apparently aluminum foil, even in these thin gauges, is a good moisture barrier. However, making use of thin foil for packaging applications requires supporting the foil with papers and/or plastic films. This is necessary for mechanical reasons.

FOIL LAMINATIONS

Apart from operating variables, important effects of papers, adhesives, and coatings on the WVTR of foil/paper laminations exist. We show some of these data in summary form to illustrate these effects.

Effect Of Paper

Paper and paperboard are among the most important supporting ma-



2 CREASES IN LAMINATIONS using thin aluminum foil can cause fracturing of foil. Note in this test that heavier paper apparently caused more fracturing of foil when creased than lighter paper. When tested flat, these laminations showed 0.00 WVTR (see Table III). (Foil used was 0.00035-in. Alloy 1145-0.)

terials for aluminum foil. Because of economic considerations, the tendency should be toward thinner and thinner aluminum foil. With thin foil, the water-vapor transmission and handling characteristics, scrap losses, and the response to creasing (fracturing) are important.

We consider the type and weight of paper to be of major importance in determining the extent of foil fracturing, therefore, the increase or decrease in water-vapor transmission characteristics.

Heavier Paper, More Fracturing

Table III lists some flat and creased WVTR data for a commercial rubber latex adhesive and a casein-neoprene adhesive as a function of paper weight. The results indicate that the greater the weight of the paper, the greater the degree of fracturing of the foil in the laminate; hence, the greater the creased WVTR value. Fig. 2 illustrates this graphically, using a logarithmic scale for WVTR and an arbitrary linear scale for relative rating.

Table IV further illustrates the effect of paper weight. Observe two important points: (1) higher weights of paper resulted in more fracturing and, therefore, higher WVTR values; (2) when the same type and the same weight of adhesive was applied to the paper *rather* than to the foil, considerably lower WVTR values were obtained. Fig. 3 shows these results on a logarithmic scale.

TABLE IV

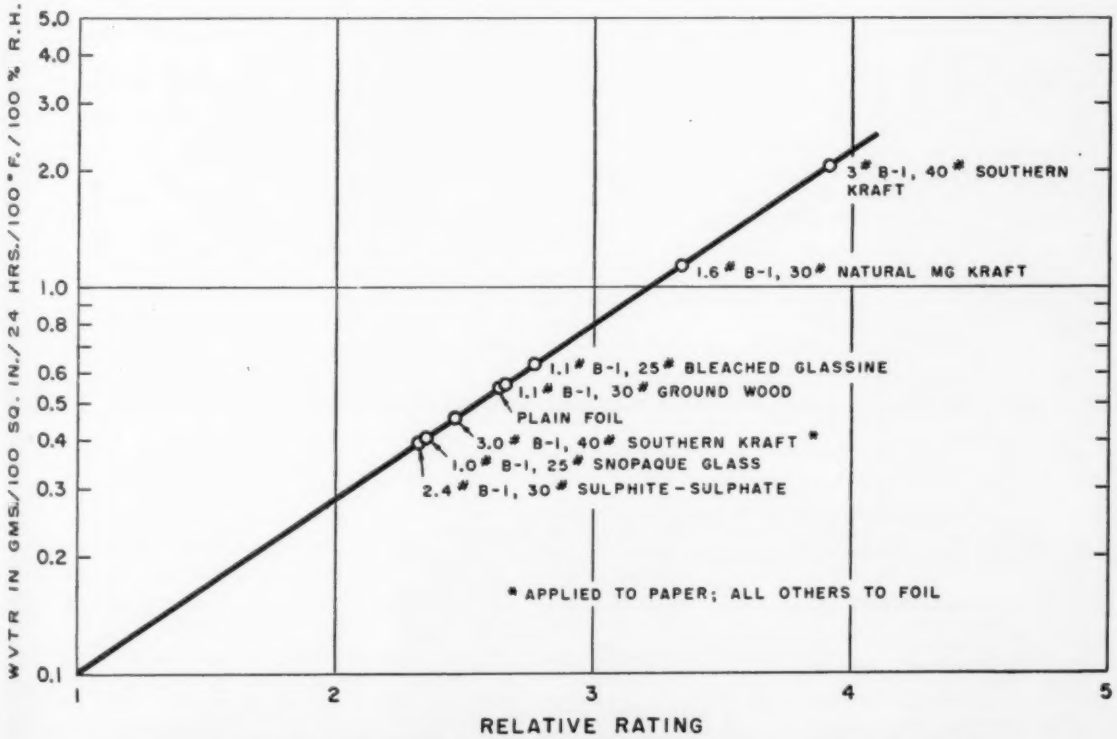
Effect Of Paper On WVTR Of Lamination To 0.00035-In. 1145-0 Aluminum Foil Using Casein-Neoprene Adhesive Code B-1 Applied To Foil Surface*

Paper	Adhesive (lb./3,000 sq. ft.)	WVTR† Flat	WVTR† Creased
30-lb. Sulfite-sulfate	2.4	0.00	0.41
25-lb. Regular glassine	1.0	0.00	0.41
40-lb. Southern kraft‡	3.0	0.00	0.45
30-lb. Groundwood	1.1	0.00	0.54
25-lb. Bleached glassine	1.1	0.00	0.63
30-lb. Natural kraft Mg	1.6	0.02	1.13
40-lb. Southern kraft	3.0	0.00	2.01

*For item marked ‡, adhesive was applied to paper.
†Gm./100 sq. in./24 hr. at 100°F., 100% R.H. Actual weights determined to fourth decimal point are rounded off to second decimal point.
‡Adhesive applied to paper; all others to foil.

Effect Of Adhesive

With a given paper, the character of the adhesive presumably has an effect on the extent of the fracturing of the foil on creasing, thus affecting the WVTR of the laminated structure. Some data on 20-lb. paper laminated to 0.00035-in. aluminum foil are shown in Table V. In general, the more flexible



3 ADHESIVE APPLICATION METHOD can affect WVTR of foil laminations. Comparing results (40-lb. Southern kraft paper), note adhesive applied to paper (before laminating) gave lower WVTR of whole structure (see Table VIII). Note again effect of heavier paper when creased (see Table IV). (Foil was 0.00035-in. Alloy 1145-0.)

TABLE V

Effect Of Water-Dispersed Adhesives On WVTR Of Laminations Between 0.00035-In. 1145-0 Aluminum Foil And 20-Lb. Foil Laminating Paper

Code No.	Adhesive Type	Adhesive Weight (lb./3,000 sq. ft.)	Creased WVTR*
P-2	--	2.0	0.02
A-1	Vinyl	2.5	0.03
A-2	Casein-neoprene	1.5	0.03
A-3	Acrylic	1.8	0.04
A-4	Vinyl-casein	1.6	0.05
F-1	Vinyl	1.3	0.06
P-3	Synthetic-rubber	1.4	0.07
U-1	Casein-latex (neoprene)	1.3	0.07
N-3	Vinyl casein	1.5	0.07
G-1	Carboxylic polyacrylate	1.1	0.08
PA-1	Vinyl	1.3	0.08
N-2	Acrylic	1.3	0.09
F-2	Casein-neoprene	1.2	0.09
N-4	Vinyl	2.5	0.09
F-3	Vinyl	2.4	0.09
P-5	Vinyl	2.2	0.10
BA-1	Casein-neoprene + resin	1.1	0.11
P-6	Casein-neoprene	1.7	0.14
B-2	Vinyl	1.2	0.15

*Gm./100 sq. in./24 hr. at 100°F., 96% R.H. are rounded off to second decimal point.
Actual weights determined to fourth decimal point

TABLE VI

Effect Of Adhesive On WVTR Of Laminations Between 0.00035-In. 1145-0 Aluminum Foil And A 30-Lb. Sulfite-Sulfate Paper

Code No.	Adhesive Type	Adhesive Weight (lb./3,000 sq. ft.)	WVTR*	
			Flat	Creased
P-1	Rubber latex	1.5	0.00	0.17
M-1	Neoprene latex	1.1	0.01	0.35
B-1	Neoprene latex	2.4	0.00	0.41
N-1	Synthetic emulsion	2.3	0.00	0.44
D-1	Vinyl emulsion	2.5	0.00	0.67

*Gm./100 sq. in./24 hr. at 100°F., 100% R.H. are rounded off to second decimal point.
Actual weights determined to fourth decimal point

TABLE VII

Effect Of Adhesive On WVTR Of Laminations Between 0.00035-In. 1145-0 Aluminum Foil And A 35-Lb. Bond Paper

Code No.	Adhesive Type	Adhesive Weight (lb./3,000 sq. ft.)	WVTR*	
			Flat	Creased
S-1	Vinyl solvent	--	0.03	0.36
PY-1	Hot melt	12	0.00	0.90
PA-2	Aqueous starch	--	0.05	0.97
PY-1	Hot melt	6	0.00	1.53
B-3	Emulsion	1.5	0.02	1.71
GR-1	Aqueous silicate	2	0.03	4.98

*Gm./100 sq. in./24 hr. at 100°F., 100% R.H. are rounded off to second decimal point.
Actual weights determined to fourth decimal point

TABLE VIII

Effect Of Adhesive On WVTR Of Laminations Between 0.00035-In. 1145-0 Aluminum Foil And A 40-Lb. Southern Kraft Paper

Code No.	Adhesive Type	Adhesive Weight (lb./3,000 sq. ft.)	WVTR*	
			Flat	Creased
B-1†	Casein-neoprene latex	3.0	0.00	0.45
AL-1	Asphalt hot melt	15.6	0.01	0.93
PY-2†	Hot melt	16.0	0.00	0.94
MO-1	Wax	7.0	0.02	1.69
B-1	Casein-neoprene	3.0	0.00	2.05
MO-2†	Modified wax	15.0	0.00	3.20
SN-1	Vinyl emulsion	2.0	0.01	4.88

*Gm./100 sq. in./24 hr. at 100°F., 100% R.H. are rounded off to second decimal point.
Actual weights determined to fourth decimal point †Applied to paper; all others to foil.

adhesives result in the lowest WVTR values.

Table VI gives some results on the effect of adhesives used in laminating 0.00035-in. aluminum foil to a 30-lb. sulfite-sulfate paper. As with 20-lb. laminating paper, the more flexible adhesives produced the lowest creased WVTR values.

High WVTR With Heavy Paper

Using a 35-lb. bond paper, we carried out a series of tests on laminations to 0.00035-in. foil, made with several adhesives. In this series, a vinyl solvent type adhesive was far superior to a sodium silicate lamination when tested in the creased condition. Table VII shows these results. Note that a higher level of WVTR values was obtained than with the 20- and 30-lb. papers.

As shown in Table VIII, we obtained rather high levels of WVTR with a 40-lb. Southern kraft paper and casein-neoprene adhesive. When the adhesive was applied to the paper *prior* to combining with the foil, much lower WVTR values were obtained. It is interesting to note that the same type and weight of adhesive, when applied to the foil *prior* to combining with the paper, gave WVTR values higher by a factor of 4. We have obtained a large number of data which show that this effect is quite real.

Effect Of Coatings

Overlacquers on the foil surface and coatings on the paper surface of foil/paper laminations can either decrease or increase the WVTR of the lamination, depending on the characteristics of the coating. We have obtained considerable data which show these statements to be true. However, a discussion on the effects of coatings is beyond the scope of this paper, but is worthy of mention in connection with the WVTR of foil/paper laminations.

(Part II, concluding this article, will appear in next month's issue.)

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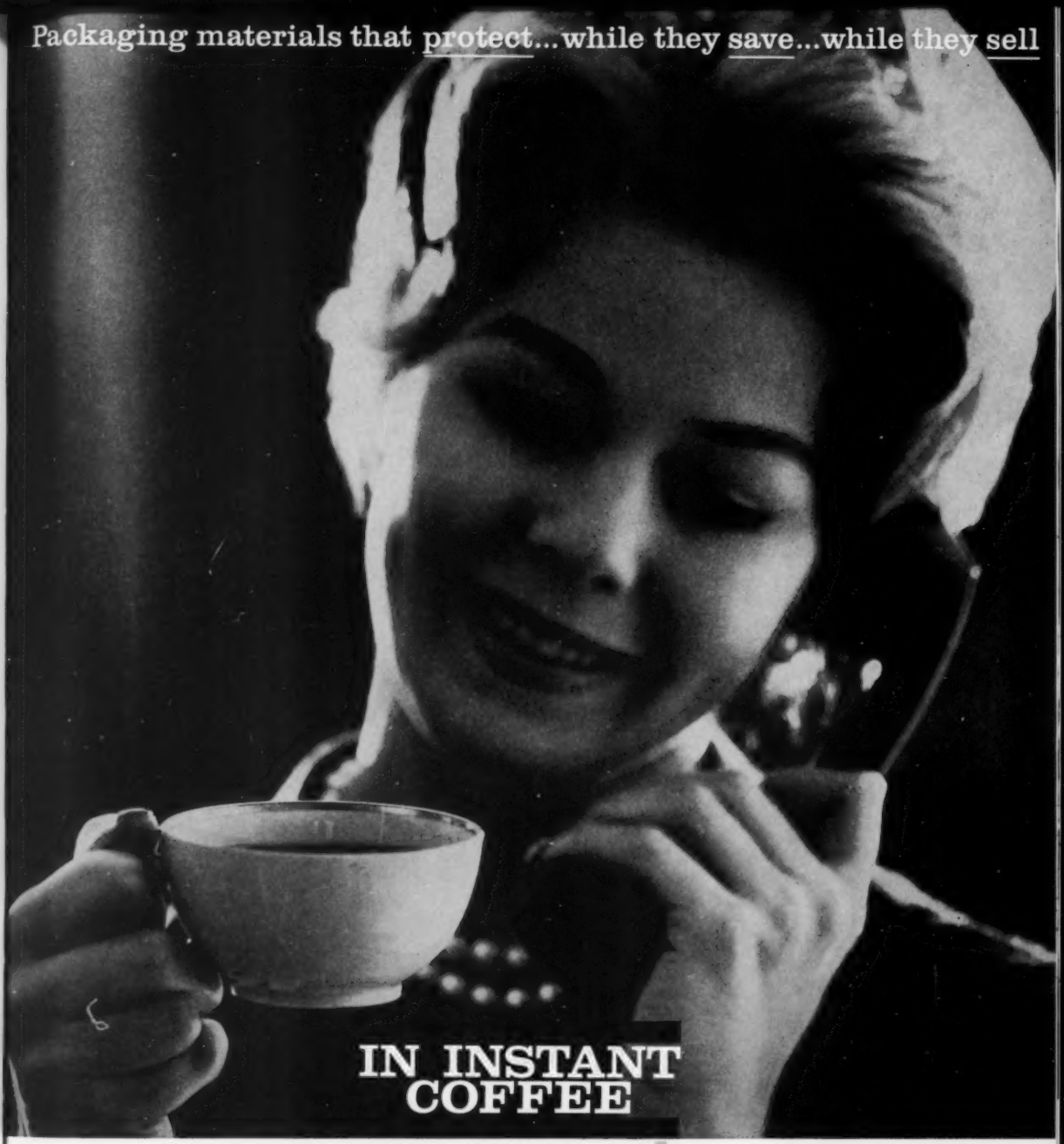

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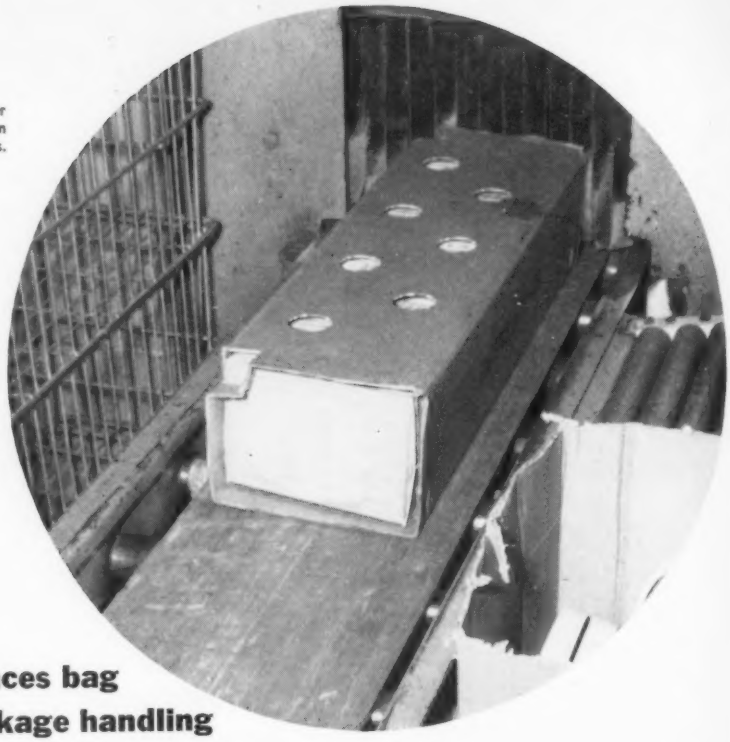

NEW PACKAGE FEATURE: locking tab (upper left corner) keeps cartons from sliding out. Open ends allow easy identification, sorting by drivers.

Corrugated sleeve replaces bag
New methods speed package handling

Change in package boosts output

By Edward Schuch,
Production Manager,
Fairmont Foods Company,
Green Bay, Wisconsin

Searching for increased production, this milk and ice cream plant found its handling of cartons after filling and sealing was slowing operations. A new multiple-pack container (and equipment to handle it) was a key in breaking this bottleneck. However, Mr. Schuch asserts, high-gear production also demands (1) efficient line performance, (2) able supervision, (3) good scheduling, (4) proper storage of materials, and (5) correct floor layouts.

Just how do you go about coordinating an ice cream packaging line so that the bagging operation can keep up with fully automatic carton filling and closing? We hiked our output by changing the type of multi-pack container for filled cartons instead of slowing down the speed of the filling machine.

The major problem facing us on this line was that of maintaining adequate speed. The bottleneck was not in the preparation and filling, but in the take-away of finished cartons enroute to the hardening room.

By installing a system whereby

corrugated sleeves replaced the paper bags previously used for multiple packages of filled ice cream cartons, we are now able to maintain production speed geared to the rate at which our filling machine can fill half-gallon cartons.

Take the filling and handling of half-gallon cartons, for example. Our operation begins with a standard filling machine which fills, closes, and discharges the cartons to a table. From this table, the single cartons are fed into the new corrugated sleeve loading operation. Before installing the present method, these filled cartons fed to a bagging chute—and this was where our production bogged down.

Elaborate Coding With Bags

Under the old system, two cartons went into each paper bag and each bag was then closed and taped with the identification of the ice cream printed on the tape. That was a real source of difficulty. We had to use tapes of different colors, as well as printing, in order to identify the different flavors.

In addition, it was hard to keep the drivers on the delivery trucks up to date on this elaborate system of coding—as they are the ones who sort out the production for delivery. Incidentally, it is easier for the drivers to sort out the various brands and flavors of ice cream than it is for the men in the hardening room where we store the ice cream prior to delivery.

Eliminating the confusion and time consumed by the coding of cartons when placed in paper bags was a major objective in changing our system. The real motive behind the entire project, however, was to speed up production.

Lagging Bag Operation

With the paper bags we were getting 425 to 430 gal./hr. using one person for packaging. With the sleeve operation our *standard* output is over 600 gal./hr., and we have been able to go up to 800 gal./hr. when freezer capacity is available.

Edward Schuch is a graduate of Iowa State College (now Iowa State University) with a B.S. degree in dairy industry science. Associated with Fairmont Foods Company for nine years, he joined the company as quality control supervisor. Prior to becoming production manager, he was milk and ice cream supervisor and plant foreman. Mr. Schuch is a past president of Northeastern Wisconsin Dairy Technology Society.

As a general principle of production engineering, we want an operation to be at least 80 per cent efficient, thus assuring worthwhile use of personnel. The bagging system did prove to be 90 per cent efficient. The sleeve system will not attain this degree of efficiency until the line hits 750 gal./hr. But, we have reached a new level of line output without even meeting our own standard of efficiency.

SLEEVES REPLACE BAGS

It was obvious that the use of paper bags was retarding our production line speed—and we explored different combinations of packages before deciding on the corrugated sleeve as a solution to this problem. The Green Bay Box Company supplied us with trial models of corrugated sleeves, and by using the samples which they provided, we were able to choose one of them and then put it into production.

The design of the sleeve incorporates locking tabs to keep the cartons of ice cream from slipping out of the open ends of the sleeve. These tabs are made like this: At both ends of the sleeve, slits or cuts are made at 3 of the 4 right-angle corners, 1¼ in. from the end, and the cuts extend down each side

NEW SYSTEM fitted into space used for old packaging method without disrupting floor plan. Standard line output now exceeds 600 gal./hr.; former method turned out 425-430 gal./hr.

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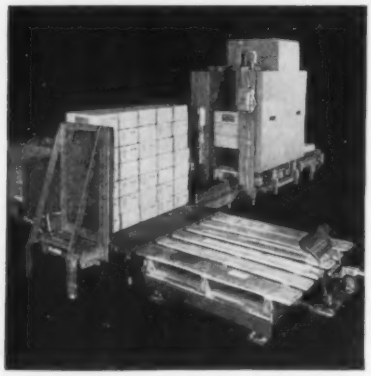

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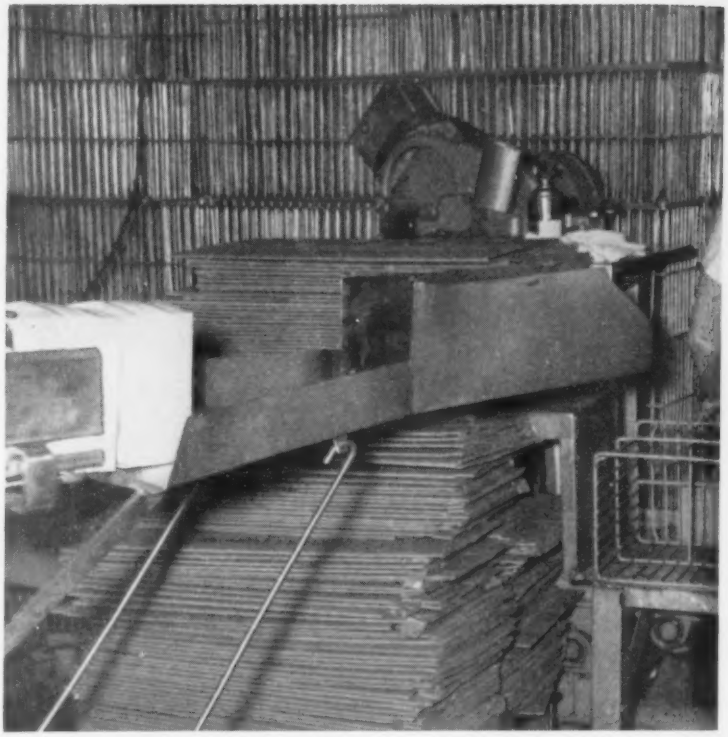

STATIONARY CHUTE (center) guides full cartons (left to right) into sleeve which operator slips over guide. Fairmont had guide built first, then let sleeve supplier make sleeves to fit.

of the corner about 1 in. By pushing in on the edge of a slit corner, a reverse right angle tab is formed and holds the cartons inside the sleeve. (See Fig. 1.)

This type of locking tab provides added protection to the end cartons because they are recessed into the sleeve. The open ends of the sleeve also permit easy identification, thus eliminating the elaborate system of coding previously necessary. The sleeves have die-cut holes on two of the four sides in order to facilitate the movement of air for quicker freezing. By actual test, hardening time of the ice cream in sleeves is very close to that required when using bags.

Adapting Machinery

Altering our machinery was a simple task when we replaced the bagging operation with sleeves. We merely replaced the bag-loading apparatus with one designed for the corrugated sleeves. The stainless steel chute of this unit (for loading the ice cream cartons into the sleeves) was made first to be sure the filled cartons could slide within it.

Next, the corrugated supplier designed a corrugated sleeve to fit the stainless steel guide or chute. Following this procedure assured both holding of tolerances and having an easy sleeve-loading action. The stationary chute has no moving parts and is quite similar to the bagging chute which was originally on the filling machine.

Filled half-gallon cartons emerge from the filler and feed directly to the sleeve device and into the sleeve without having to be turned. In contrast, when the cartons went into the bags, they had to be turned 90 degrees. This direct feeding is a definite aid to faster packaging.

Once the corrugated sleeves are loaded with 6 half-gallon cartons of ice cream and the locking tabs are pressed down into place, the sleeves move by conveyor into the hardening room. *(Turn page)*

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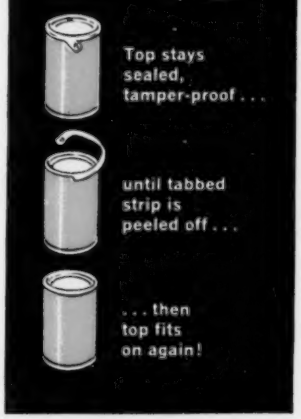

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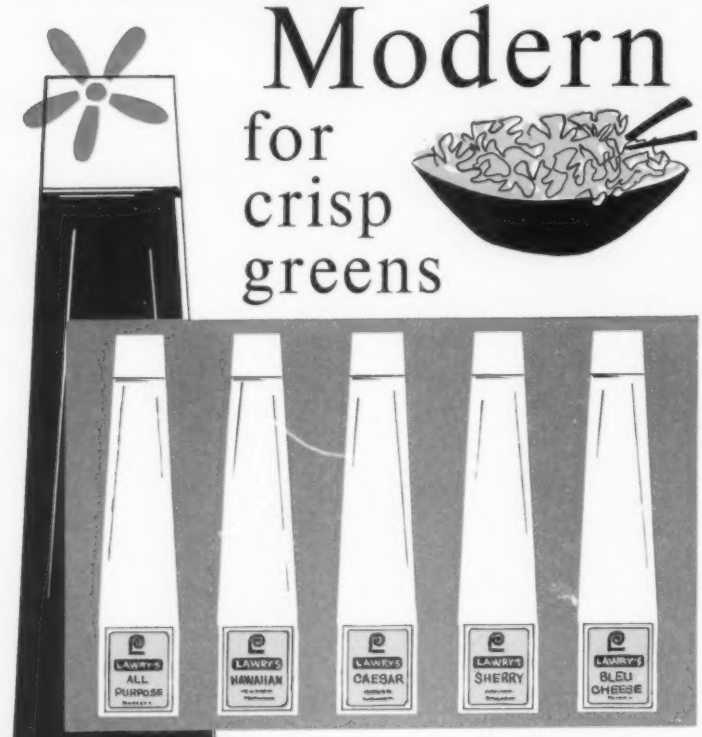

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Sleeves Are Reused

Reuse value of the sleeves brightens the cost side of our packaging picture. The initial cost of the sleeves, higher than that of bags, dictates our getting 4 plus a fraction trips out of each sleeve to recover this cost. In practice, however, we get 7 to 8 trips per sleeve.

The changeover from bags to the corrugated sleeve is a proven success. However, to appreciate the implication of the changeover and its hiking of our production, let's review some of the other problems we have solved. After all, you can't change one element without affecting others.

BUYING CARTONS

Many of our packaging difficulties can arise because of inadequate machinability of folding cartons. This is most often brought on by our having several different carton suppliers. Each supplier's cartons run in a different way and have different performance characteristics, yet each meets our requirements.

Points of difficulty with cartons include variations in caliper of stock, scoring, locking details, dimensional tolerances, and so on.

As a result, when the equipment is adjusted for filling one kind of ice cream into its particular carton, a change in flavors or brand of ice cream means slowing down the machinery to make the adjustments necessitated by the use of a different carton.

However, there is a balancing factor: we seldom have two suppliers making cartons for the same item. In other words, only one supplier provides us with cartons for any one particular brand or private label.

Layout A Factor

Speed and ease of operation are challenging goals. Floor layout is a most important contributing factor in accomplishing these goals. Our layout remains fairly constant and is changed only at rare intervals when necessary for a particu-

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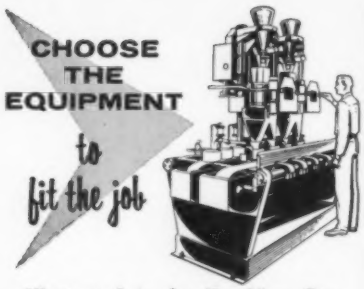

Illustrated is the Bar-Nun Can Line for feeding, filling, packing and ejecting cans, jars or cartons. Gump Equipment also includes net weighers for manual lines, and automatic bag packaging equipment. Packagers of dry powdered, granular or crystalline materials can stop costly overweights and save on packaging labor with the right model of this highly accurate and dependable equipment. Write for recommendations on your packaging requirements. Tell us the material, weight, container, capacity desired.

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OPERATOR FIRST slips sleeve over guide, then slides cartons into sleeve, and then presses locking tabs into place. Die-cut holes in sleeve assist in quicker freezing of ice cream.

lar item or project. The foreman, the production manager, and industrial engineer plan a layout together. Incidentally, our introduction of the sleeve packaging operation necessitated no changes in our floor layout.

CARTON STORAGE

To us, proper storage of cartons is all-important because you can ruin good cartons by prolonged storage and improper handling. For example, stacking cartons too high means that the bottom cartons seem to become a little distorted and don't break properly on the machinery. A first-in, first-out practice for carton inventories must be followed to attain the best results from the cartons in the machinery. We feel it is important to follow the suppliers' recommendations for storage wherever possible.

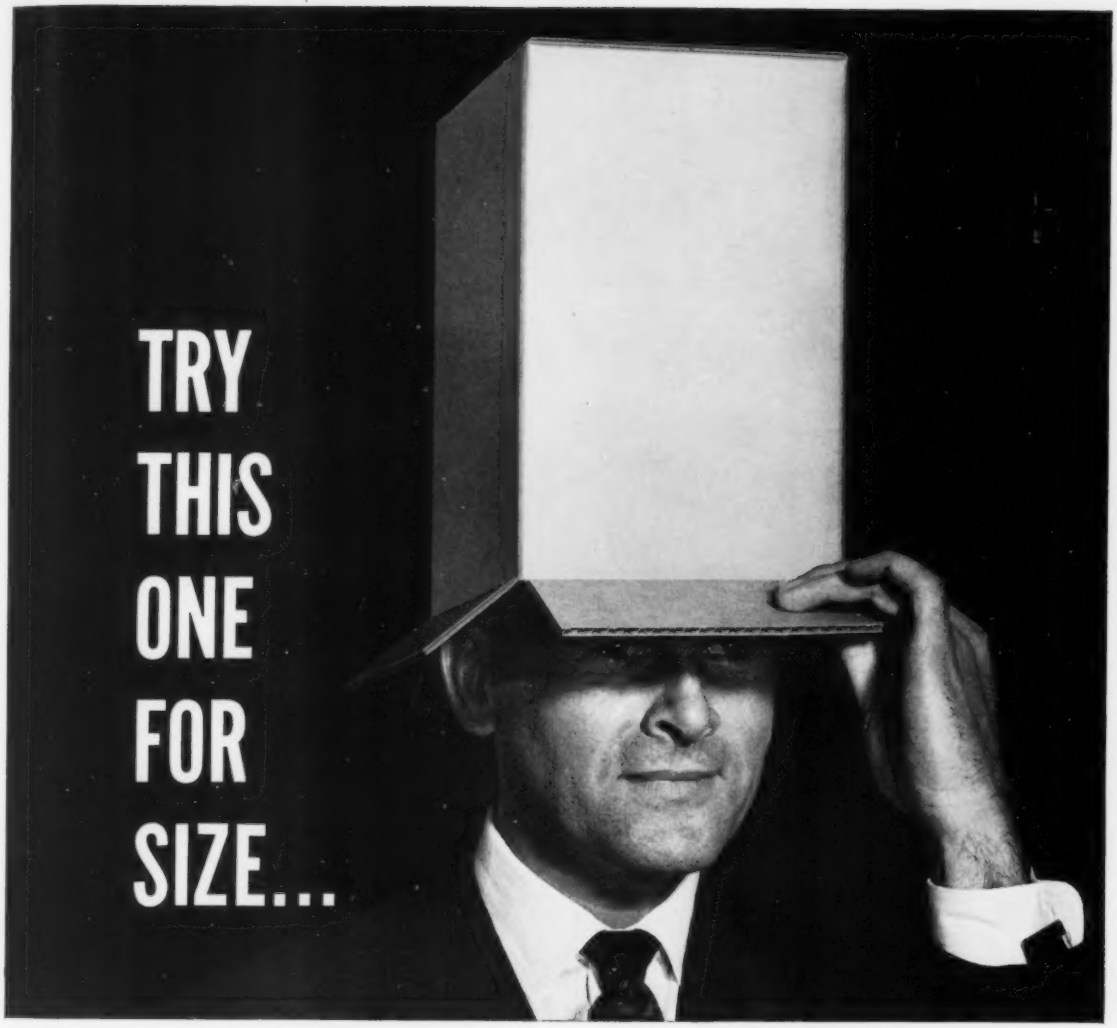
Six Months Maximum

Our cartons fair rather well in dry storage at room temperature, without air conditioning or humidity control, but we set six months as the maximum length of storage time. If we keep cartons around until they are a year old, we run into trouble when using them. Cartons can so easily stay over their storage time limit, especially if bundles get shunted off to one side or corner of the storage area, or sales demand changes for the particular item.

To get around this, we have adopted a practice of ordering cartons only three times a year. Of course, this means that we must anticipate our requirements for the next four months of production at the time of placing this order.

This places quite a burden on the individual foreman for good scheduling within his particular department because he is responsible for working out the details of carton orders by using the best available sales forecasts. However, this is not as difficult as it seems because we have found past experience an extremely good guide. We may run into a snag on private label work, but we have successfully hedged against it by overestimating our needs on this sort of packaging—to provide a cushion. For the bulk of our ordering, however, we go by the records of actual past production requirements.

Deliveries are scheduled in connection with each order. The stock man is alerted for their arrival, and



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When it comes to protecting heads, most people think of hats. But those charged with the responsibility of choosing the right boxes think of INLAND containers. They've saved a lot of buyers' heads.

INLAND containers start with thorough research. They are custom-designed . . . custom-engineered . . . custom-built. Their unexcelled performance is never just a happy coincidence. For every type of product they are "the boxes that build good will."

• • •

Wondering if your packaging can be improved? No need to guess. Call your nearby INLAND package engineer . . . then try INLAND'S package on for size. You'll like the way it fits!

INLAND CONTAINER CORPORATION
Corrugated Fiber Containers
General Offices: Indianapolis, Indiana
Partners in Progress with American Industry

he is responsible for seeing that the cartons are used on a first-in, first-out basis.

THE KEY—YOUR PEOPLE

Much time, thought, and money has gone into developing an efficient operation. We have studied the types of cartons, our machinery, our layouts, our storage, etc., but where would we be without capable crew members? Effective packaging necessitates good people.

To us, the real key to peak production is to get the people on the packaging lines thinking about their jobs. Superintendents and foremen must listen to the ideas and opinions of their respective crew members and help them to develop interest in their work. Boiled down, it is a matter of choosing the right people in the first place and then placing them properly on the packaging line.

Enthusiasm Contributes

There is little argument with the fact that people must have enthusiasm for their work to function effectively, so all you have to do is choose the people with that enthusiasm! For some reason, it just doesn't seem to work when you try to build it into a person after he gets on the job.

In hiring, we basically look for enthusiastic, clean, neat people with a certain amount of intelligence. Of course, they must also be physically capable of handling the job to which they will be assigned, and some manual dexterity is an asset. Probably the most important attribute is a sense of responsibility along with the physical capacity to do the work.

Sleeves Vs. Bags—Easier?

Looking for these qualities in hiring our employees pays off. Take for instance the introduction of the corrugated sleeve to replace the old bagging operation. As always, new ideas are hard to sell and so are changes in methods. At first, our people thought that the sleeves were harder to handle. But one day, we had an opportunity to prove that they were not harder to handle.

We ran out of corrugated sleeves, went back to the paper bags, and had to slow down the operation for a few days. By this time, our people had gotten to like the sleeves and found by actual comparison that bags were actually harder to handle.

Loading is faster and easier with sleeves. More ice cream can be handled per man-hour. Because palletizing is impractical in our case, we find this best for loading multiple-stop semis and trucks. The sleeves are a convenient size, and their shape and weight make them easy to handle.

Supervisor's Routine

A part of the routine for the supervisor of our packaging operation is a morning tour through each department, helping the formen to correct any operational difficulties and checking to make certain that schedules are being met. He also

JUST
5 MINUTES
CAN SAVE YOU
TIME AND MONEY ON
ADHESIVES

THAT'S just about how long it takes to read Arabol's special 8-page booklet . . . *How to buy adhesives for better adhesion.* It contains a list of 23 basic questions which will help you determine the qualities and characteristics you need in your adhesive requirements. This guidance questionnaire probably can save you time and money in your *manufacturing, packaging* or *case-sealing operations.*

We would like to send this booklet to you. It's free and there's no obligation. Mail your request on your letterhead to: Dept. PE—ARABOL MFG. CO.—110 E. 42nd Street, New York 17, N. Y.

Circle No. 233 on Card

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IMPACT-O-GRAPH'S job is to track down the cause of damage and supply the information to change packaging or shipping methods if necessary. IMPACT-O-GRAPH is also widely used to test the ability of products to stand up under the shocks or impacts encountered in their use.

Many models are available with a wide choice of "g" ratings for use either in a package with a product or attached to the carrier.

Send today for the new brochure giving the specifications on different IMPACT-O-GRAPH models...their operation and uses.

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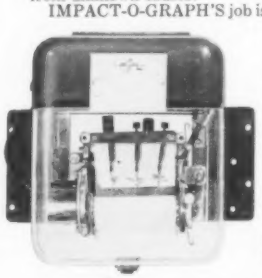

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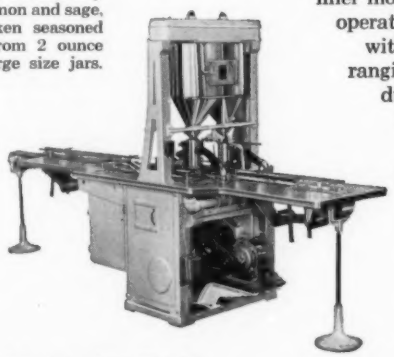
FMC Auger Fillers are "quick change" performers for Spice Islands

Spice Islands Company, world famous San Francisco packer of exotic spices and seasonings, selected FMC Auger Fillers to meet rigid requirements. They needed accuracy and speed. But just as important they had to have quick changeover in packaging a wide range of sizes and products of varying characteristics. Fully automatic and semi-automatic fillers handle with equal facility such spices as curry and garlic powders, ground cinnamon and sage, hickory smoked salt, and chicken seasoned stock base. Containers range from 2 ounce "apothecary" to regular and large size jars.

The Duplex Auger Filler model HG-84 shown here is one of several units installed at Spice Islands. Completely automatic, it is available with a choice of filling methods—cam volumetric, gross weighing or auger combined with vacuum for packing dusty products—at speeds up to 70 packages per minute. Many other auger filler models for automatic or semi-automatic operation are designed to handle products with "difficult" characteristics at speeds ranging up to 140 units per minute. Production run accuracy is outstanding in filling cans, jars, cartons or other containers. Size and product changeover is exceptionally fast and simple for powders, granules and certain paste products.



Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

FMC Packaging Machinery Division

Stokes & Smith Plant

4994 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

For the whole story of how FMC Auger Fillers can improve your packaging, write for your copy of Bulletin P-811.

How Lord Baltimore helps package 62,000 fish sticks every hour

LORD BALTIMORE'S packaging service extends beyond the creation of high-quality, printed cartons for Gorton's of Gloucester. Here is how our experts increased production efficiency for this volume processor of sea foods.

To meet rising demand, Gorton's looked for a more efficient way to sort and package fish sticks. The installation of our Dex-O-Pak* system was the answer. It unscrambles the product and completes the entire packaging cycle in less than *3 minutes*.

We offer high-speed packaging systems and cartons for any volume product. Our nationwide engineering program includes installation, regular servicing, operational training and maintenance.

Lord Baltimore's packaging service can increase your production efficiency. For information, write: 425 Park Ave., N. Y. 22, N. Y.; San Mateo, Calif. or 333 N. Michigan Avenue, Chicago, Ill. *T.M.

Lord Baltimore Press

encourages the foremen to check schedules independently.

Another responsibility of supervising a packaging line operation such as ours is to watch out for vacations and make allowances for replacements. Fairmont's normal policy is to let our people take their vacations when they want them. Up here, near the 45th Parallel, few people want March or November vacations. Thus falls on the shoulders of the supervisor the responsibility for replacements, who know their jobs, coming in during our peak season.

Foremen In Command

The foremen in our plant play a big part in making things run smoothly. Fairmont's number one policy in this context is to let the foreman of any particular department be responsible for it and be free to run it.

We have two ways of qualifying foremen—either by experience gained in coming up through the ranks, or by taking recent college graduates and training them for the position. To qualify for his position, the foreman must be capable of using and maintaining the machinery. He must be able to point out particular problems and, in general, he has to be everything from a chaplain to a mechanic. We try to set up an atmosphere whereby the people on the line know that the foreman is the man to go to for everything. He has to be "top dog" in fact as well as in name.

To master his job, he must thoroughly understand all aspects of the production for which he is responsible. Training the people on the line is a major aspect of his job. He tries to get across to each of the operators the importance of their work and tries to sell them on the idea of doing a particularly good job.

Instilling enthusiasm and interest is an important aspect of the training, but most often, this simply has to rub off from the foreman. He goes over with the workers the details of the job and how the production is done. During training, and even after, he and the employees look at the packages together, particularly going over complaints of defective packaging.

There must be daily communication between the foremen and the employees. He must follow the usual practices of maintaining, and encouraging in others, good human relations. He never forgets or ignores his people.

DECENTRALIZED SCHEDULING

Probably the major problem with an ice cream operation such as ours is the scheduling of production to avoid unnecessary changeover and downtime. Each foreman schedules his own work and coordinates this through the production manager.

We have found that strictly *departmental scheduling* generally works as well as anything else we have tried. We do our scheduling of runs on a weekly basis. Usually, the information has to be put together a week ahead of time in order to anticipate the needs of special promotions and that sort of thing.

The production manager keeps up on the needs for ingredients and other materials in order to meet these peak loads. Each foreman strives to schedule his work production runs so that there is the least amount of unproductive time and work involved, i.e., changeovers which could be avoided through forecasted schedules.

Departments Cooperate

Even though each foreman does his own scheduling for his particular department, all of the foremen must work together. For example, the foreman of one department must help another by furnishing materials to him and, similarly, he is depending on another foreman for the supplies he needs.

In contrast to the practice of having a centralized scheduling operation, we find it very helpful to have this sort of decentralized procedure where each foreman does his own planning and scheduling of production. *(End)*

(Advertisement)

How LORD BALTIMORE's packaging service saves time and money for Gorton's

BEFORE recommending a specific mechanized system, Lord Baltimore's engineering staff surveyed and analyzed Gorton's complete packaging operation. Production called for the immediate packaging of fish sticks as they tumbled from the freezer onto a continuously moving belt. Lord Baltimore's Dex-O-Pak* system was chosen to unscramble and package this jumble of frozen fish sticks.

From chaos to carton

Dex-O-Pak's automatic integrating system quickly aligns the fish sticks into two even rows of 8 sticks each. The rows are then automatically layered and the 16 fish sticks are inserted into a one-piece printed carton. Finally, each carton is closed and sealed by Lord Baltimore's high-speed Thermo-Stik® process. The entire Dex-O-Pak operation takes less than 3 minutes from chaos to sealed carton. A 4-color Fidel-I-Tone® carton that *sells on sight.*

Matched nationwide facilities

Lord Baltimore's folding box plants are located in Baltimore, Md.; Clinton, Iowa and San Leandro, Calif. They are backed by the complete resources of International Paper's mills and research centers. Our matched nationwide facilities and 11 sales offices serve these packaging fields:

Frozen Foods	**Beverages**
Dry Foods	**Pharmaceuticals**
Cosmetics	**Tobacco**
Dairy Products	**and many others**

*T.M.

How deep should you dig into adhesive problems?

What about adhesive application design?

Can heat be applied to adhesive reservoirs?

What are effects of adding wetting agents, penetrants?

When are defoamers used?

Improve your packaging adhesive performance

By E. Patrick McGuire,
Technical Service Manager,
Packaging Adhesives & Specialty Products,
Resins and Chemicals Department,
The Borden Chemical Company,
Division of The Borden Company, New York

Rising production costs keep all of us aware of the continuing need to improve package component efficiency. No less important is the adhesive you use daily on your packaging line. To help you seek out some of the underlying reasons for adhesive problems, Mr. McGuire offers suggestions for reducing adhesive costs and increasing its efficiency, and answers some questions about the use of defoamers, wetting agents, and heat on glue pots.

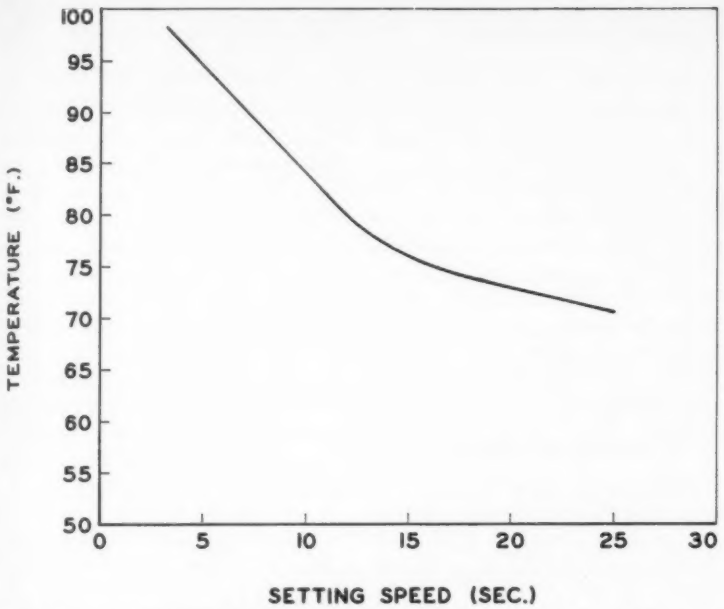
The impetus of rising production costs has given rise to the improvement of package component efficiency. The packaging engineer has systematically sought out more effective and efficient packaging materials and machinery. The purpose of this article is to explore some of the avenues open to improving packaging adhesive performance.

Get Close To Problem

It is axiomatic that, to improve the performance of any facility, we must first have a reasonable idea of its relative effectiveness. The major problem with regard to packaging adhesives revolves about exposure; that is, frequently, the packaging engineer does not allow himself to be exposed to the production differentials inherent to different adhesive systems. To illustrate the latter concept, let us consider a very basic example.

A packaging engineer must evaluate the efficiency of an adhesive being used on a fully automatic case-sealing machine which seals both top and bottom flaps of a loaded corrugated container, and injects the case into a 20-ft. compression section. The engineer is faced with the following basic determinations in evaluating the degree of the adhesive efficiency:

1. What is the mean setting time of the adhesive in use and how does this setting-time characteristic affect production design and capabilities of the case-sealing unit?
2. What is the average amount of adhesive consumed per case when the case is sealed in accordance with the standards set for this particular closure?
3. What amount of machine downtime is attributable to defects in adhesive performance?
4. What amount of measurable indirect cost is connected with adhesive ma-



1 INCREASE IN APPLICATION TEMPERATURE of adhesives can give faster setting, thinner spread, and deeper penetration. Shown is relationship of application temperature to setting speed for plasticized polyvinyl acetate (PVAE 90 parts, CCl_4 5 parts, DMP 5 parts).

terials handling to the case-sealing unit?

Change Factors Into Costs

The above factors may be translated into *adhesive costs*. Here is how this might be done:

Factor No. 1—The packaging engineer must supply some data on what cost reductions are possible through the increment of speed afforded by the use of a faster-setting case-sealing adhesive.

Factor No. 2—The engineer should arrange a trial with a weighed and measured amount of case-sealing adhesive run out in its entirety in a pre-determined number of case units, with a pre-determined and measured application pattern on the case flaps in question.

Factor No. 3—The overall downtime classification (includes downtime because of breakdowns, jams, defects in adhesive performance, and so on), which is a general industry practice to accurately determine downtime on a particular production machine, must be broken down into a sub-classification to clearly distinguish those breakdowns which are attributable only to poor adhesive performance. Then, the actual allocation of cost would be an accounting procedure depending on such factors as capitalization, depreciation rates, allowable rates per square foot of floor space occupied by the capital equipment in question, etc.

Factor No. 4—The engineer would have to make a comparison of the benefits in reduced manpower and man-hour wages through utilization of direct pumping transfer systems, and for the general reduction in manpower by utilization of more mechanized adhesive transfer apparatus.

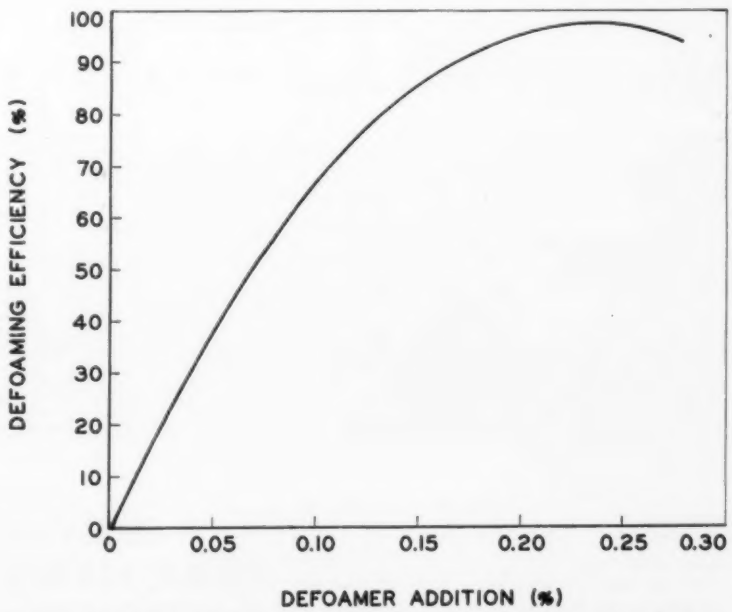
The translation of costs for Factor No. 1 in the above is obviously more complicated than the last three determinations presented. However, the packaging engineer may assign a cost on the basis of floor space allotted, direct labor, indirect labor, and rated depreciation for the units involved.

With the above determination of assignable cost, the packaging engineer now has a reference standard from which to work.

Again, considering the above example, we may visualize a situation in which an adhesive might be selected to replace the adhesive now in use. The replacement adhesive might well have an initial cost *three times* that of the standard adhesive. However, an investigation of costs might reveal that:

1. The replacement adhesive may be *sprayed* rather than roller-coated onto the case flaps with a subsequent 50-per cent reduction in adhesive used per case.
2. The 20-ft. compression unit may be reduced to a 5-ft. unit with a calculable savings in square footage assignable to this packaging operation.

Within the past few years there has been a growing appreciation of the latter concept. With this has come the expected reduction in "initial-cost" type purchasing policy. *(Turn page)*



2 ADDING DEFOAMERS to adhesives at point of use may be needed to reduce foaming—amount usually depends on defoamer type. Measuring defoamer amount against its effectiveness shows diminishing result at 0.20-per cent concentration for typical aqueous adhesive system.

Improve Present Adhesives

In the case-sealing illustrations above, we approached the problem of increased efficiency from the point of view of adhesive replacement. However, in many instances, it is not practical to replace the adhesive now in use. In many cases, more effective adhesives for the job in question may not exist.

We must, therefore, consider some of the factors which will improve the adhesives you are currently using. Some of the conditions conducive to increased packaging adhesive performance are:

1. APPLICATION DESIGN

It is imperative that you have minute control over the relative thickness of the glue line applied. Only through such control will you be able to maximize the setting speed and penetration potential of the adhesive in question. Adhesive application thickness should preferably be controllable to 0.0015 wet inches of adhesive thickness, and the settings for desired thickness must be reproducible.

Watch For "Dead Spots"

The design of adhesive application trays, glue pots, etc., should be such that the adhesive reservoir is free from "dead spots" or areas in which the adhesive is not agitated by the action of the adhesive components acting upon the adhesive. Complete agitation will remove the adhesive from the danger of partial drying with the resulting discontinuous glue lines that often accompany such a condition.

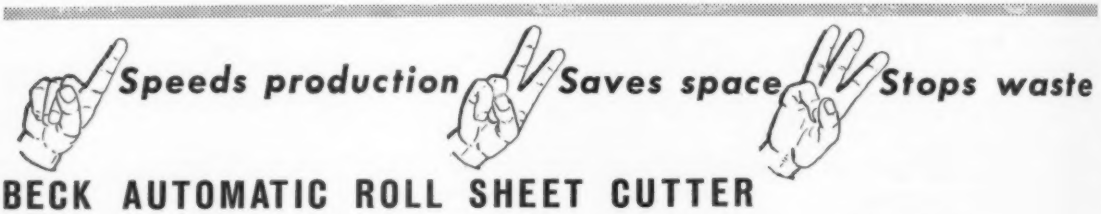
2. ADDITION OF HEAT

It is entirely possible to accelerate adhesive performance by elevating the temperature of the adhesive prior to application. An adhesive at 60°F. does not perform with the same facility as the same adhesive maintained at an operating temperature of 95°F. If we are to accept most of the current theories concerning adhesive application, we must then ratify the latter increment of heat by reason of increased molecular mobility alone.

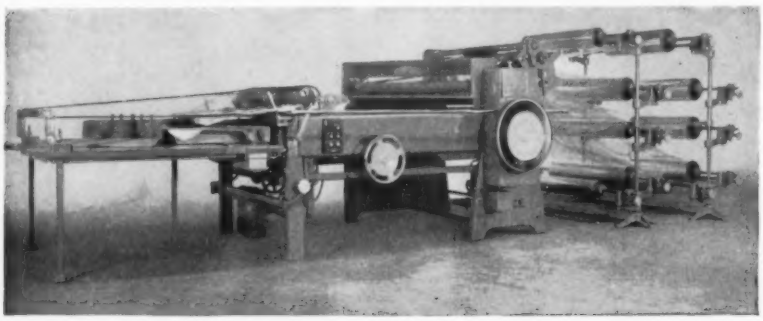
What Amount Of Heat

The degree to which a particular adhesive system will withstand the application of heat will depend on the compounding technique that went into the creation of the adhesive. If, for example, the adhesive has been deliberately destabilized to effect faster setting characteristics, the application of heat would then have to be proportionately reduced. Typical of the latter adhesive types are the resin-emulsion varieties to which amounts (10 per cent or more) of solvent have been added.

We have had success with borated dextrines, polyvinyl alcohol-clay adhesives, and plasticized polyvinyl acetates in regard to the addition of heat. As stated before, the amount of heat allowable is determined by the size of the adhesive reservoir and the withdrawal or consumption rate for the particular adhesive application in-



BECK AUTOMATIC ROLL SHEET CUTTER



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How Union-Camp's 5-Star Plan saved multiwall user up to $450 per carload of bags

This is a new kind of "Big-Inch" story.

A major mid-west packer* wasn't convinced his multiwall bagging operation was all it might be. Could Union-Camp's 5-Star Multiwall Plan help?

To get the answer, Union-Camp multiwall specialists visited the plant. They found that the automatically filled bags occasionally stuck in the sewing head. Also, that the sewing line tended to "belly" and form an arc pattern. The result was considerable loss in production and frequent breakage. Another problem—the bags didn't warehouse well.

"Sew-Straight" Solution

After completing their analysis, the Union-Camp men suggested installing a "Sew-Straight" attachment right onto the sewing head. The bags could now be closed with an "E" head in a perfectly straight line. And only *1 inch* from the top of the bag. That single inch made all the difference.

Less paper—less breakage

To begin with, shorter bags could be used. The savings in paper alone cut the firm's multiwall costs from between $350 to $450 a carload. Imagine the savings based on several dozen carloads a year!

Before and After. Old, semi-circular closure pattern (left) and the new closure (arrow). Note the straight sewing line, and how close it is to the top of the bag.

The new attachment also speeded production by eliminating sewing head jam-ups. Moreover, since the top closure is now identical to the *factory-sewn* bottom closure, the bags form a perfect pillow shape—no awkward ears. This makes them easier to handle . . . easier to stack. And there's less breakage and fewer rejects.

How much could you save?

Perhaps an idea unearthed through Union-Camp's 5-Star Plan could save you money. The chances are excellent. For every day, multiwall users, large and small, are reducing their multiwall costs by capitalizing on this comprehensive packaging service. Their savings run from a few thousand dollars to over $100,000 a year.

Apart from bag construction, this economy program covers bag design, specifications control, packaging machinery, and a survey of your materials handling operation. And it costs you nothing—regardless of the brand of bags you now use.

FREE 16-PAGE BOOKLET

Write Dept. M-3 today for a free copy of Union-Camp's new 5-Star Plan booklet. It describes many case histories showing how packers like yourself have achieved greater efficiency and economy in their multiwall operation.

UNION-CAMP*
MULTIWALL BAGS
Union Bag-Camp Paper Corporation 233 Broadway N Y 7, N Y

* NAME ON REQUEST

volved. On relatively small glue reservoirs, with rapid replenishment rates, temperatures of 115° to 125° F. have not produced premature adhesive destabilization. The addition of heat to the adhesives mentioned above has resulted in thinner adhesive spreads, deeper penetration, and faster setting properties. (See Fig. 1.)

How To Apply Heat

There are a number of ways in which the adhesive application tray may be heated. Ideally, the tray would be jacketed with a hot-water or steam jacket. Lacking this, strip resistance heaters affixed to the outside of the glue tray will suffice for small installations.

Immersion heaters have not been too successful due to the tendency of adhesive to build up in insulating layers about the heater element. Oil jackets, heated and recirculated, have been used in some installations, but these arrangements often provide more heat than is actually needed.

In all of the heat-producing installations above, it is mandatory that you equip the unit with a dependable thermocouple, temperature gauge, and controlling device for the heat-producing equipment.

Clean-Up Needs Extra Care

The application of heat to many adhesives will require extra care and perseverance with regard to clean-up procedures. Adhesive will tend to cake and set up on machine parts more readily, and some local charring or precipitation will be noted in the corners of the applicator trays.

While on the subject of heat, we can point out the success some adhesive users have had with regard to the pre-heating of glue flaps. One frozen food packer experienced considerable difficulty in obtaining the needed fast-setting bond on its food containers. To remedy the situation, heater bars and infra-red lamps were installed on the equipment to bring the surface temperature of the glue flaps up to 105°F. Although the flaps remained heated for a relatively short time, the interval was nonetheless sufficient to materially aid the adhesive's setting and bonding characteristics.

3. ADDITIVE COMPOUNDS

Because of the storage stability problems involved, it is not always feasible for the adhesive manufacturer to add a full amount of surfactants or penetrating agents to the adhesive in question. In general, there are two classes of compounds that might be added to the adhesive prior to actual use in the plant.

Wetting Agents

The first class we shall consider will be those designated as surfactants or wetting agents. The general purpose of a wetting agent is to aid penetration into a dense substrate, and to aid in the promotion of a continuous glue at the adhesive interface. The wetting agent is added in minute quan-

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Roller gun, plunger actuated

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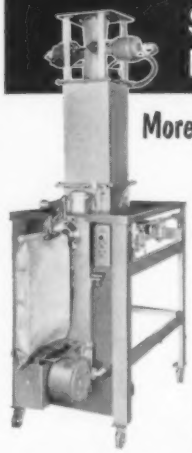

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Bearings, in lubricant, for guidance control system Kodapak-capsulated.

Packaging operation, White Area, Cargo Packers, Inc.

Perfect climate packaged with the product ...in Kodapak Sheet

When the armed forces need a replacement bearing they need it "here and now"! At sea, in the tropics, at the Poles! What's more, they want it clean as a whistle—no grit, grime or corrosion!

That's why many bearing manufacturers have their products sealed in tough, crystal-clear Kodapak II, by Cargo Packers, Inc., (Glendale, N.Y.). Here, in a surgically clean, *temperature-moisture controlled White Area* "hydrogen sulfide and sulfur oxide gases are absent... Particle count is held to less than 100 per sq. in. of .45 micron porosity paper." And this climate is packaged with the product!

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"Kodapak"—trademark for Eastman's Plastic Sheet

tities. With sufficient agitation, agents effective in aqueous adhesives are:

Aerosol OT
Dupanol ME
Tergitol No. 4
Sodium lauryl sulphate

The percentage of addition may range from 0.01 to 0.10 per cent, and will depend on the effectiveness and potential of the surfactant chosen, as well as an evaluation of the amount of surfactant already present in the compounded adhesives. Precise quantities must be determined through consultation with your adhesive supplier.

Penetrants

The second general category of additives of this type includes the solvent additions an adhesive user might make to its adhesive immediately prior to use.

Once again, remember that the limitation of storage stability often imposes severe limits on the amount of solvent that an adhesive producer may make available in its adhesive compound. Many solvents will simply *not* stay captive in a compounded aqueous adhesive for any length of time.

To achieve greater penetration into coated paper surfaces, the packager, in consultation with the adhesive supplier, may desire to add solvent. The choice of solvent will depend on the nature of the coating to be penetrated. Aliphatics, chlorinated hydrocarbons, and some aromatics may be added to many resin-emulsion and dextrine-based packaging adhesives.

Add Solvents Cautiously

Solvent addition to packaging adhesives by the packager is nonetheless a delicate task. Chief among the difficulties encountered with the latter procedure are the following:

1. *Extensive viscosity alterations.* Selected solvents added in excess of 5 per cent often produce excessive thinning of the adhesive. The opposite extreme will be noticeable in those cases where incompatibility exists.
2. *Residual odor.* The addition of solvent by the packager to a package adhesive increases the possibility that the finished package might contain a residual solvent odor if the glue line is not properly dried.
3. *Increased plasticity.* Resin-emulsion adhesives may be more completely plasticized by solvent additions, and thus exhibit greater elongation under stress and lower heat resistance.

The above comments are definitely meant as a caution to the packaging engineer with regard to solvent addition. However, you must not construe the latter remarks to be a complete disapproval of solvent addition.

4. DEFOAMING

Nearly all adhesives contain defoamers. These are added at the adhesive manufacturer's plant to facilitate adhesive production and to protect the ultimate user against production-robbing foam formulation during the use of the adhesive.

The effectiveness of the defoamer in a particular adhesive system will often be a function of the relative age of the adhesive; that is, as an adhesive ages, the defoamer por-

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Fully Automatic
LABELING MACHINE

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variable speed drive from 40 to 150 per minute.

LABEL RANGE
"postage stamps" to 6" wide by 6" long.

LABEL MATERIALS
foil, paper, plastic, etc.

CHANGEOVER TIME
approximately 15 minutes

CONTAINER RANGE
1½" high by 1" diameter through 14" high by 7" diameter. Practically any shape.

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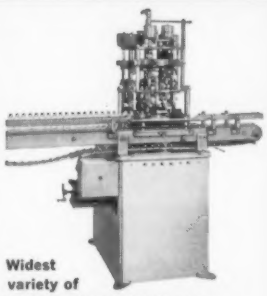

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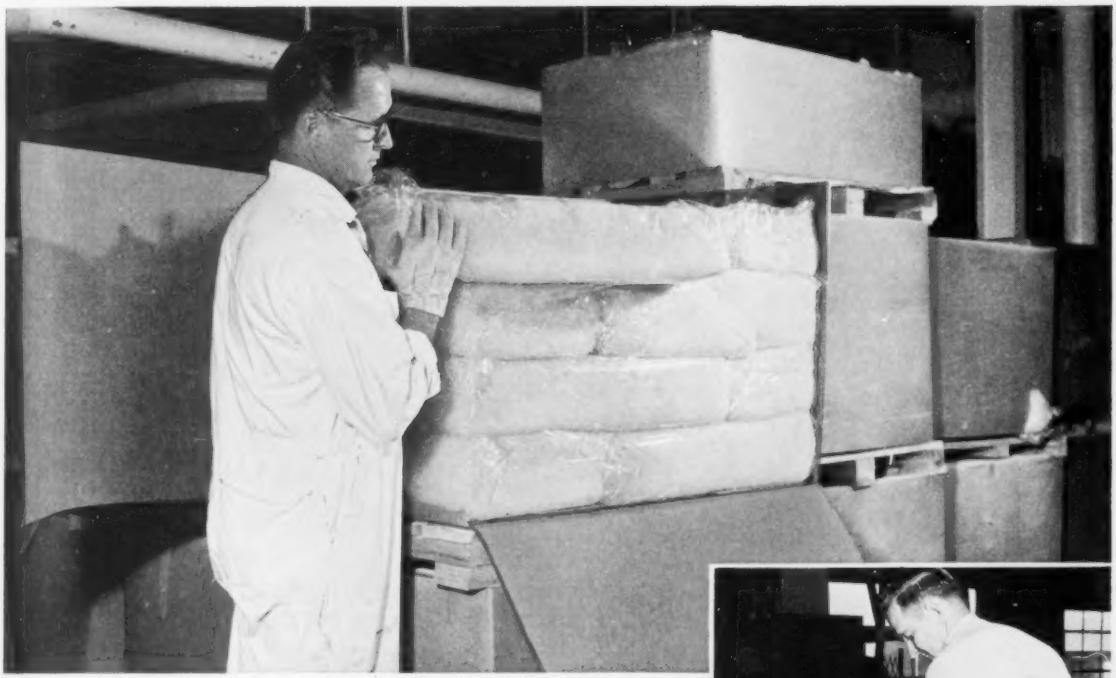
SILICONE NEWS from Dow Corning

Silicones lighten the load



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Syl-off® silicone coatings on paper and paperboard make it easier to unpack sticky products . . . simplify and speed handling. Even such tough stickers as raw rubber, asphalt, adhesives and plastic bases come away cleanly and quickly from all types of containers and process papers coated with Syl-off. Nonmigrating and noncontaminating, these anti-adhesive silicone coatings help processors remove all of the product . . . cutting waste to the bone . . . minimizing unloading time.

More Applications. Pressure-sensitive decals, labels, decorative trims and wallpapers peel free in a flash without tearing from Syl-off coated separators or backing papers. Use of food grade Syl-off coatings on food packaging papers is in compliance with provisions of the Food Additives Amendment of 1958.

Benefits All. Everyone who buys, ships or uses sticky products profits from Syl-off coated papers. Even your shipping costs are lower because Syl-off coatings actually weigh *less* than other release coatings.

For Information about properties and applications of Syl-off . . . and for a list of sources for paper products with Syl-off coatings, contact the Dow Corning office nearest you. Address Dept. 6414.

Your best source for information about silicone paper coatings, defoamers and anti-blocking agents is the Dow Corning office nearest you.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.

For more information circle No. 242 on Reader Service Card

tion of the formulation will become more homogeneous in the adhesive system and lose its efficiency. You will recognize that the manufacturer may not overcome this defect merely by adding additional defoamer at the time of the manufacture.

Therefore, it is necessary for you, the packaging engineer, to consider the possibility that additional defoamer may be required at the point of adhesive use.

Amount Depends On Type

The amount of defoamer addition will ordinarily depend upon the defoamer type in question. Measuring amount of defoamer against defoaming effectiveness shows a diminishing result at 0.20-per cent concentration. Fig. 2 is illustrative of this effect.

Typical of the defoamers suitable for use are:

Colloids No. 581
Antifoam A. emulsion
Nopco JMY
Arnold Hoffman No. 66

EMERGENCY ALTERATIONS

It is possible that the user of adhesives might face an emergency situation which requires immediate adhesive alteration using only those substances commonly available in a local drug or hardware store. Remember that the materials listed below are only stop-gap measures and represent a compromise at best. In all instances, the adhesive manufacturer should be contacted and should provide the basic alterations.

Materials To Use

The following materials have helped provide stop-gap protection:

1. *Salt.* Ordinary table salt has been used to slow the drying speed of animal-based adhesives.
2. *Calcium chloride.* Used as a plasticizer and to reduce setting speed in dextrine-based adhesives.
3. *Sodium bisulphite.* Used to bleach and reduce the color characteristics of vegetable-based adhesives in additions of less than 0.25 per cent.
4. *Dairy cream.* Used as a defoamer in latex and resin-emulsion adhesives—less than 0.50 per cent recommended.
5. *Vinegar.* Acetic acid utilized to improve bonding of vegetable-based adhesives to paper surfaces.
6. *Phosphoric acid.* Used in resin-emulsion adhesives in additions of less than 2 per cent for adhesion to waxed surfaces—tends to destabilize emulsion in higher concentrations and reduce pot life.
7. *Liquid detergents.* Many liquid detergents, such as Vel, etc., provide a wetting action for resin-emulsion adhesives.

SUMMARY

The packaging engineer must ascertain accurately actual adhesive costs to initiate improvements in performance. A detailed analysis of adhesive characteristics and performance potentials provides the basis for adhesive coating.

The efficient design of applicator components, the addition of heat, the addition of penetrants and wetting agents, and adequate on-the-spot defoaming, often improve packaging adhesive performance.

Emergency alteration of an adhesive system can sometimes be accomplished by the addition of household chemicals in consulting with your adhesive supplier. *(End)*

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Air powered, the Fast-Flo doesn't require expensive electrical wiring. Fits all standard drums.

Some plants handle up to 25 different materials this economical Graco way.

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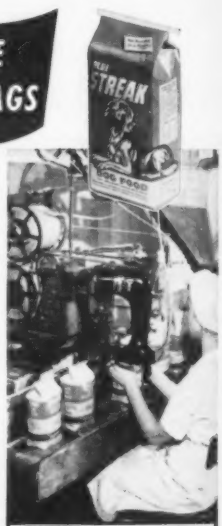

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BAG CLOSING MACHINES

Circle No. 243 on Card
Circle No. 244 on Card

This semi-automatic machine at Colonial Corporation of America makes a polyethylene bag around each shirt using printed roll film.

AUTOMATED POLYETHYLENE PACKAGING CUTS COSTS 50%

Colonial Corporation of America boosts packaging efficiency and sales while halving packaging costs with polyethylene packaging system.

More than half of Colonial Corporation's yearly output of 30 million low-priced shirts is packaged semi-automatically in printed polyethylene bags. The bags are formed around the shirts on See-Safe machinery using rolls of printed polyethylene film. And the company plans to extend the system to its entire operation.

Sol Berger, president of Colonial, the country's largest producer of inexpensive shirts for men and boys tells why:

"Increased efficiency. One operator on each machine replaces four girls who handled the earlier manual bagging operation.

"Lower costs. When we switched from cellophane overwrap to polyethylene bags five years ago, we cut costs 35%. With the automated polyethylene packaging system, we cut costs another 50%. The See-Safe machines are relatively inexpensive. We figure we amortize each machine in about 6 months. This polyethylene packaging system lets us market shirts at a low price — as low as one dollar at retail for one of our biggest sports shirt sellers.

"Expanded sales and profits. The package, printed in various colors and automatically registered by the machine, is attractive as well as economical. The customer can see the merchandise through the transparent film. The bag is sealed on three sides with two spot seals at the bottom. This lets the customer feel the fabric, yet keeps the shirt well protected and in place."

Investigate the cost-cutting, sales-stimulating advantages of automated polyethylene packaging for your soft goods. As a producer of PETROTHENE® polyethylene resins from which film is made, U.S.I. has a trained staff of film and packaging engineers. They are available to work with you and your film supplier in finding the packaging system that is best for you. A call will put them at your service.

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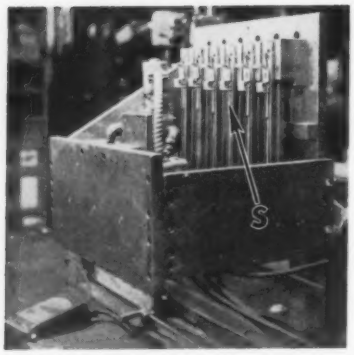

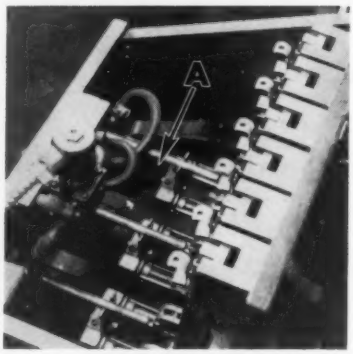

HOME-BUILT DEVICE for stapling six units to display cards reduces labor cost of this operation. Device contains six industrial-type staplers (S) and three solenoid-operated air cylinders (A).

Mechanize for intermittent packaging

By Frank Van Parys,
Vice President, Production,
Ammco Tools, Inc., North Chicago, Illinois

A small company thinks twice before asking a machinery builder to design and make a small, unusual stapling machine to partially mechanize an intermittent packaging operation. Using its ingenuity and available resources, Ammco built a device which semiautomatically staples six individual packages to a display card simultaneously—thereby cutting packaging and labor costs 60 per cent.

We package several thousand units a year of a small brake-cylinder surfacing hone. This volume does not lend itself to full-time automated packaging, but we find that improving even an intermittent packaging operation helps keep costs down. We use a home-designed and home-built stapling device to lend a touch of automation to our hone packaging operation. It makes the packaging easier and improves the appearance of our unit package. And just as important, it cuts our packaging time in half and costs practically nothing to operate.

This unit package consists of six individually packaged hones stapled to an easel-type display card. Formerly, with less volume, we hand-stapled the individual hone packages onto the display card. This was a slow and inaccurate process. With our new stapling equipment, we semiautomatically staple all six individual packages onto the unit-package card at one time.

Stapling Device Construction

We designed and built our stapling device in our own plant since we had the materials and machine tools at hand. Its components include six Bostitch industrial staplers, three solenoid-operated air cylinders, some pieces of 1-in. steel plate, and various-sized pieces of steel and aluminum.

The staplers, mounted in a vertical position on the back plate of the device, are aligned so that their action forces a horizontal row of staples through each of the individual hone packages and the

GAYLORD designs out the extras

Last year, a certain manufacturer used a shipping container with 21 interior pieces. Although it was effective, assembly costs were high, so the container was presented to Gaylord designers for revision.

Result: a container with only 9 interior pieces, that has less tare weight, makes assembly easier, and reduces packaging costs 33⅓%.

Simplify *your* packaging problems. Let Gaylord design the extra pieces, weight, trouble and cost *out* of your corrugated containers. Call your nearby Gaylord Man today.

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GAYLORD CONTAINER DIVISION

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HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

display card when the attendant pushes the operating switch of the unit. The air cylinders are mounted on the back side of the front plate and all three cylinders work simultaneously. One air cylinder simultaneously drives two of the six staplers by means of a cross bar attached to each air cylinder head.

The steel base plate of the device has two parallel guide tracks on which a movable carriage is mounted. The display card and hones are placed in this carriage which moves in a horizontal direction from the open "loading side" to the "stapling side" behind the bank of staplers.

The guide rails are made of square bar stock and the carriage is aluminum. The carriage is mounted on small steel rollers and the operator pushes it from one side of the packaging fixture to the other. One side plate of the stapling unit is placed at an angle (on the carriage track side) to allow room for the carriage with the display card in it to pass under and into position for stapling.

Air Operates It

We decided to use air-operated equipment for the fixture since it was easy for us to tap our plant air line for operating power. This air line carries a normal pressure of 90 lb./sq. in. and is accessible throughout the plant. This lets us move the stapling device to any location convenient for this packaging operation. However, it usually stays in one place (near the storage and shipping area) for ease in moving finished packages to storage.

How It Works

Each hone (a hand tool used to refinish the inner surface of automobile brake cylinders) is individually packaged in a clear, thermoformed 0.0015-in. polystyrene bubble and sealed within a die-cut and scored 0.030-in. newsboard sheet by a female operator. She staples six of these hone packages to a 14-ply newsboard display card and places this unit package into a single-wall, 175-lb.-test, A-flute corrugated book-fold container.

Making A Hone Package

To form a hone package, one of our packagers first places the tool in the plastic bubble. She then puts the bubble with the hone in it on one half of the newsboard sheet which has the scoreline running lengthwise down the center of the sheet. The other half of the sheet has a die-cut hole which fits the outline of the raised part of the plastic bubble. She next folds this half of the card along the center scoreline over the bubble and hone. Pressure-sensitive latex adhesive (previously applied to the card by the supplier) seals the folded paperboard sheet together and holds the bubble and hone securely in place. The completed individual hone package measures 9⅝x 2¾x1 in.

Prepares Display Card

After preparing a large supply of hone packages, the girl then places one display card in the movable carriage of the stapling unit. Next, she places six hone packages, one at a time, into the six slots in the carriage which position the hone packages for stapling onto the display card.

Now she pushes the carriage along the guide rails to a hand-operated indexing stop. This aligns the carriage holding the card and hone packages in the correct position behind the six stapler heads. To put the first staple (of a pair) through the individual hone packages and into the display card, the

WITH EASEL-TYPE DISPLAY CARD (D) in carriage (C), operator inserts individual bubble-packaged hone (H) into each of six slots.

OPERATOR PUSHES CARRIAGE along guide rails (R) to pre-set indexing stop which aligns carriage behind the six stapler heads.

Frank Van Parys attended Northwestern University Institute for Management and Lake Forest College Industrial Management Institute. Since joining Ammco in 1938 as a lathe operator, he has been a field sales representative and plant manager before assuming his present position of vice president, production.

operator presses a switch (which may be operated either by hand or by foot) and this actuates the air cylinders. She then turns the indexing stop to the second position, moves the carriage about an inch along the guide tracks to this second stop, and again trips the switch to put the second staple into each of the six hone packages.

Staples Line Up

The completed unit package now has six individually packaged hones stapled to one display card. There are 2 staples in the top edge of each of the hone packages and the 12 staples run in a straight line across the display card. This is enough to hold the hone packages securely in place on the display card and yet the retailer can easily remove a single hone from the package without destroying the appearance of either the single hone package or the display card.

To remove the completed unit package from the stapling carriage, the operator moves the carriage back to its original starting position, withdraws the display card, and stacks it on a nearby packaging table.

Put In Corrugated

The completed 14x13¾-in. display cards, with the individual hones attached, go next into the single-wall corrugated, book-fold containers. One strip of gummed kraft tape seals this container and it is ready for direct shipment.

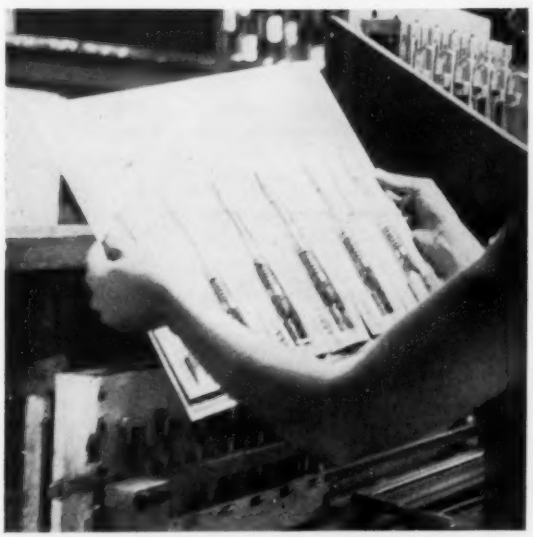
We usually send these hones directly to automotive supply wholesalers. Since they often want several display cards of hones, we have a shipping case which holds six book-fold containers, or 36 hones. This is a regular slotted corrugated container, 200-lb.-test, A-flute, and measures 14½x14x8½ in. When orders call for quantities of more than 18, but less than 36 hones, we put them in this container and fill any extra space with creped kraft dunnage.

What It Saves

Before we built our stapling fixture, we had an established packaging speed for stapling six hones to the display card by hand. This rate is now 60 per cent less per unit package. This also means that labor costs have been drastically reduced. The present method is much simpler than the old way of hand stapling and the package appearance is considerably improved. All individual hone packages are precisely positioned on the display card and the 12 staples form an evenly spaced, straight line across the package.

Another advantage of our stapling device is its extremely low cost of operation, and we have practically no investment in the equipment. Further, we reached the ultimate in reducing overhead costs—we have none, in a sense. That is, all we do is tap the plant air line for power and if there is an overhead cost here, it is so small as to be negligible. *(End)*

ACTUATING AIR-CYLINDERS by switch puts in first set of staples; operator then moves carriage another inch and puts in second set.



TO REMOVE CARD, operator slides carriage to left. Twelve staples (two in top of each package) lined up across card make neat display.

Mr. Schoenberg gives these case histories as typical of moisture problems confronting the packaging engineer. →

Wanted:
packaging line tests that help you on the spot—Part II

By William Schoenberg,
Paper Industry Instruments, Cleveland

Anyone actively connected with production packaging using paper or paperboard, for any length of time, has had some unusual experiences that would challenge a skilled detective. For instance, one problem which plagues those working with cellulosic products is moisture. We have included some case histories which are typical of moisture problems, along with their analyses. (See opposite page.)

Those who use or manufacture cellulosic packaging materials must allow for the principles exemplified by the four case histories. Otherwise they will experience the problems cited.

It is well known that cellulose thirsts for moisture equilibrium with the atmosphere with which it is in contact. As the atmosphere changes in relative humidity, so will the cellulose change in moisture content percentage. The same occurs when the cellulose is manufactured into paper or paperboard, when these are fabricated into individual packages and filled. This change in moisture content, per se, is annoying but need not, of *itself*, be of serious consequence to the packager.

How Changes Occur

Of greater importance is the fact that, as the moisture-content percentage changes in paper and paperboard, so do all of the physical properties of the material, of the packages made from it, and of the filled packages. Many of these physical properties vary to an amazing extent with only slight changes in moisture-content percentage. (See graph, Page 74.)

A change of 2 per cent in moisture content will cause a gain or loss of from 15 to 25 per cent in the steep position of the curve showing moisture-content percentage versus physical test result for some properties. Some of the properties most seriously affected by this are those important to the end-use performance of filled packages, such as stacking strength, tear (as for opening perforated tear strips and pouring spouts), scuff resistance, puncture, dimensional stability, etc.

Thus, for example, if the stacking strength of corrugated boxes is to be adequate under high-moisture conditions, the compression strength of the boxes must be greater than needed under normal atmospheric conditions. Unless you take this into consideration when planning specifications for products made from cellulose, trouble can result.

Affects Line Performance

Also affected by this are the properties of folding cartons and corrugated boxes which determine their performance during the packaging operation. The forces required to open or erect cartons and bend scores; properties of springback (resistance to tension), of stiffness and dimensional stability, of adhesive absorption (including rate of absorption and drying time); etc., all affect the performance of folding cartons and corrugated containers in packaging lines. A change in moisture alters these properties and may seriously affect their line performance.

Purchase specifications intended to insure the smooth running of packaging lines and end-use specifications intended to insure satisfactory filled package performance should both take this phenomenon into consideration. Such specifica-

(Text continued on Page 74)

Case Histories

Case History No. 1:

A customer complains that our corrugated containers are not standing up properly when stored in its warehouse—that the sides of our corrugated containers, comprising the bottom tier of piles, are buckling even though they are not stacked higher than normal—that competitors' containers do not present this problem—nor did our containers in previous shipments.

A visit substantiates customer's claim. Investigation reveals that the same merchandise, packaged in corrugated containers from the same lot that caused trouble to complaining customer, are trouble-free when shipped to other customers. Careful testing of sample corrugated boxes from complaining customer and from shipments to other customers shows no appreciable difference in test results.

Analysis No. 1:

The troublesome lot was just over the accepted limit when tested for compression in the standard testing atmosphere of the testing room. The complaining customer's warehouse was quite damp at the time it had trouble with our boxes. Our containers buckled because they picked up moisture which caused them to lose compression strength.

Our previous shipments to this customer had higher compression test than did the troublesome lot, or else its warehouse was drier when previous shipments were used. Boxes from the same lot, upon which complaint was received, that we shipped to other customers performed satisfactorily because they were not subjected to a high-humidity atmosphere.

Our lot that caused complaint was just good enough in standard relative humidity—it was not good enough in high relative humidity.

Case History No. 2:

A customer complains that folding cartons containing a powdered material bulge badly when displayed on shelves—and that this was not a problem with previous shipments.

Sample lot returned by customer to illustrate complaint, when checked in our testing laboratory, shows no "bulge." An immediate trip to customer's establishment substantiates its claim. Sample picked up from customer's premises and returned to home laboratory appears to be in perfect condition when exhibited there.

Analysis No. 2:

Customer's establishment has high relative humidity. Cartons increase in moisture content as equilibrium is reached with high humidity, thereby decreasing board stiffness. As cartons are moved about and otherwise handled, the contents "packed." As carton stiffness decreased, the packed powder "bulged out" the weakened side panels.

The samples sent to us by the customer and the one picked up from its establishment reached equilibrium with a lower humidity atmosphere while enroute and were tested under standard humidity conditions. As the side panels lost moisture, they became stiffer. Jogging of the sample lot, while in transit, shook up and loosened the packaged powder, allowing the stiffened sides to resume original position.

Previous lots shipped to this customer either had a higher stiffness value or else the customer's premises had a lower humidity when our cartons were there. Also, it is possible that the powder did not pack so hard on previous shipments.

Case History No. 3:

Packaging foreman reports enforced slow-down of packaging line because packages are not properly sealed when leaving packaging line at usual speed of operation.

Investigation substantiates claim. Further investigation discloses that adhesive being used is from the same barrel that worked satisfactorily the previous day, that the cartons being processed are from the same lot that worked perfectly the previous day, and that no changes have been made in packaging machine adjustment.

Analysis No. 3:

It probably was raining when this trouble occurred. In the presence of this very high humidity, the cartons increased sufficiently in moisture content to affect the efficiency of the adhesive. There was sufficient moisture in the carton flaps to increase the drying time of the adhesive. In addition, the increased *amount* of moisture could decrease the rate of penetration and dilute the adhesive that did penetrate into the board. Both conditions decreased the bonding strength of the adhesive.

Increasing the adhesive solids without increasing the viscosity, or decreasing the viscosity without the addition of extra water (as by heat) would increase the amount and rate of penetration, particularly if the carton flaps were heated also. The addition of a small amount of the proper penetrating agent to the adhesive might have served the same purpose.

Case History No. 4:

Packaging foreman reports high percentage of jam-ups, high percentage of spoilage, and unusually high machine downtime when running new lot of cartons.

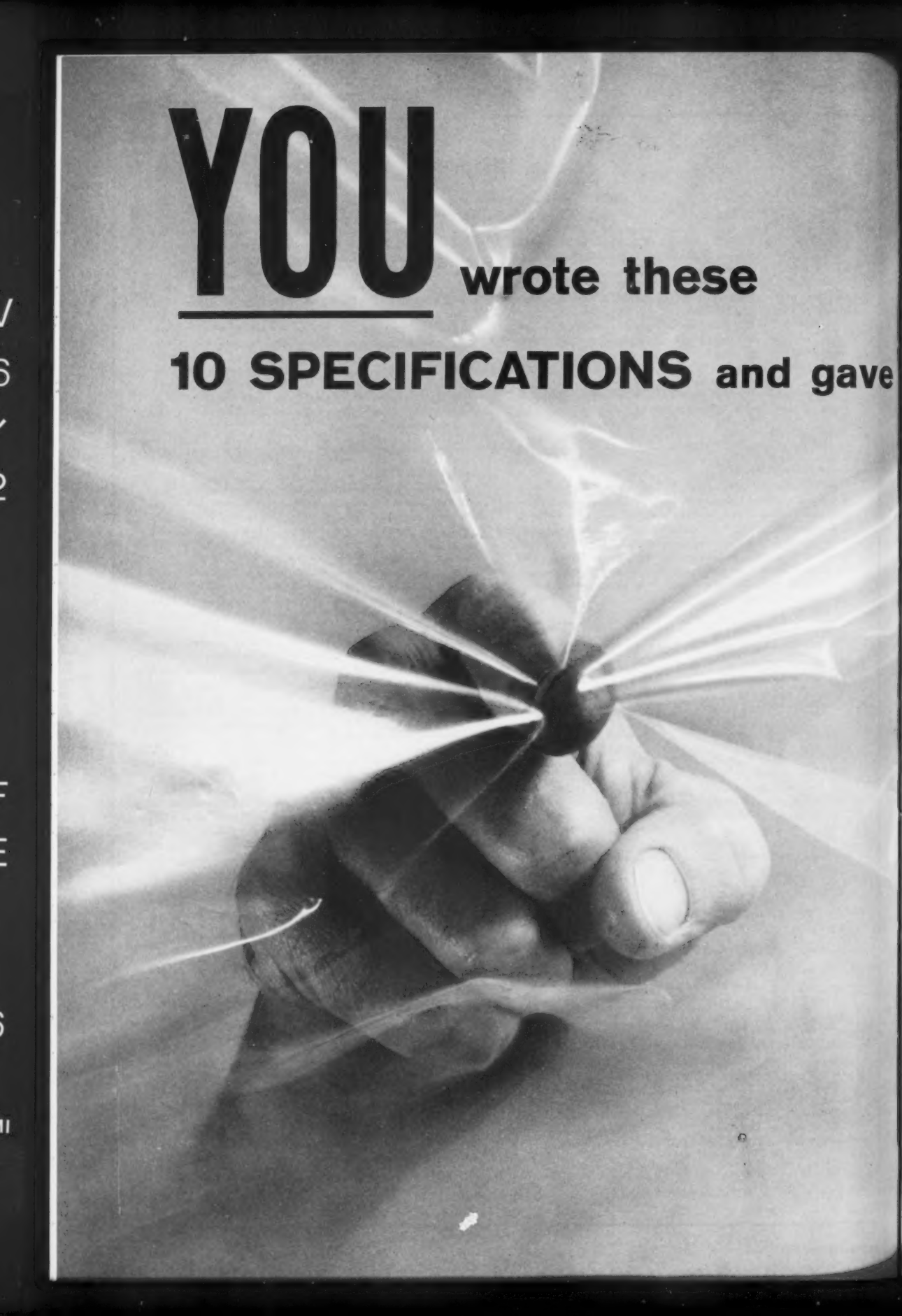
Investigation substantiates claim. Running of this lot of cartons is suspended and call put in to supplier. Supplier's representative arrives one week later. The same lot of cartons is put on the machine to show the representative the difficulties experienced. The cartons run perfectly.

Analysis No. 4:

Cartons were on the dry side when first tried. With low moisture content, the board was stiff and both the opening force and the score bending force were high. Accordingly, cartons did not "square-up" properly causing jam-ups. Cartons that did go through the opening device had poor score bend causing further spoilage and downtime.

By the time the supplier's representative arrived, the cartons had increased in moisture content, decreasing both opening force and scorebend measurements. Cartons "squared-up" better, scores bent easier, so cartons ran better on the packaging machines.

For ad on next page circle No. 247 on Card ▶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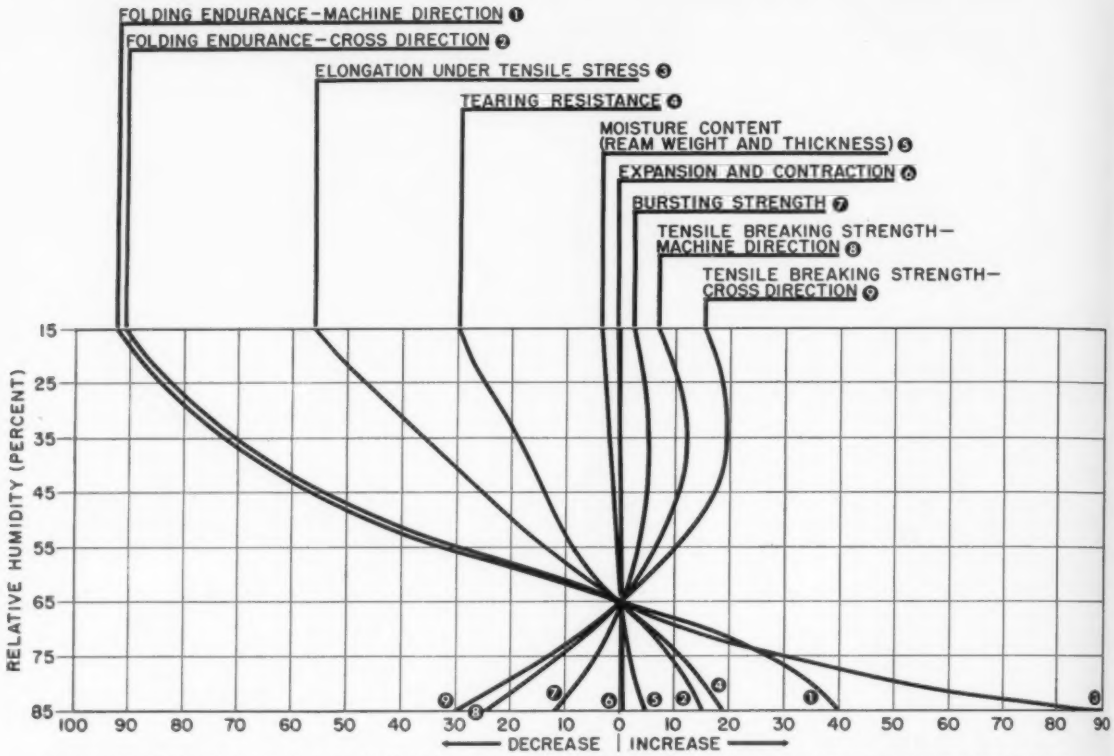

VARIATION OF PHYSICAL QUALITIES (COMPOSITE CURVES) FROM VALUES AT 65% RELATIVE HUMIDITY (PERCENT)

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tions, then, would be more rigid than needed under favorable moisture conditions to insure desired results during unfavorable moisture conditions.

Standard Tests

The effect of atmospheric moisture change upon test results of properties of cellulosic products, such as paperboard and corrugated, has long been recognized by the Technical Association of the Pulp and Paper Industry. Most TAPPI standard tests call for the test specimens to be brought to equilibrium with a specified test atmosphere prior to testing. This atmosphere has a relative humidity of 50 per cent and a temperature of 73°F. To be sure of entire samples reaching the required equilibrium, these samples remain exposed within this atmosphere for 24 hr.

When testing for referee purposes or in evaluating research results, these procedures have proven highly satisfactory. However, they are primarily concerned with supplying historical information. Obviously, where time is a factor, as when controlling a production run, the test information is not available in time to help control that run.

Results May Mislead

Accelerated aging tests came about to overcome such drawbacks. In general, this is done by either blowing or sucking conditioned air through the test sample. This requires a humidity-conditioned testing room which is not available in most packaging operation areas. The time required to carry the sample to the testing area and to return the information to the production area, plus the time required for testing, can be considerable. At today's speeds, modern machinery can produce a considerable amount of improper material during this time.

Wherever humidity-conditioned testing rooms are available, it is necessary to carry the sample to that area, carefully protecting it meanwhile from moisture change. This change occurs much faster than many realize or will admit. If the moisture content of the sampled product is at considerable variance with the relative humidity of the surrounding atmosphere, the change in moisture content of the sample will be of major consequence. Results of tests of the physical properties of the sample will be quite different from actual conditions in the sampled product. Tests made upon such samples will only measure the properties of the samples themselves. The samples are no longer representative of the sampled product.

More Error Than Trial

Information supplied by such tests is not correct. Decisions based upon such information must be wrong. Proper control of quality

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cannot rest on decisions that are not correct or on information obtained from tests of samples not adequately protected from moisture change. The trained skills of machine operators are preferable to such test information.

Unfortunately, in most instances, limits of acceptability—that will assure the smooth functioning of primary packages throughout packaging operations and that will assure the desired performance of filled packages—cannot be reached theoretically. With our present knowledge, only the trial-and-error method determines them. Actually, it is the error more than the trial that establishes the limits.

Group Research Needed

Answers to such problems will most likely evolve from either research undertaken jointly by groups of packagers or from the work of the technical committees of the Packaging Institute or from other technical and scientific societies. They are in a position to do more towards this end in less time and for less money than most companies could working alone. However, for such committee activity to be truly effective, the committee members must have the active backing and support of their companies.

A series of *cooperative* investigations under the auspices of one of the technical societies, possibly with government assistance, would seem the best, easiest, and least expensive way to get such information. The basic significant factors for each different purpose can be identified and the correct means *and degree* of protection specified. Each packager could then modify these factors to fit its individual requirements. The resulting knowledge could be of inestimable value to the packager, the supplier, and the end user.

Not Enough Trouble?

It sounds like a paradox, but it is undoubtedly true that more packaging machines would run faster and have less spoilage if they had more trouble. When everything is running smoothly, it is more difficult to believe that improvements are necessary than when one is having trouble.

One good measuring stick to use in determining whether or not one has a problem in connection with the packaging operation is to find out how fast that machine can possibly run. Then, you should *determine the percentage of time at which this machine is running at maximum speed with total absence of spoilage.* When this occurs all of the time then, obviously, there is nothing you can do to improve that machine's performance.

However, by "all of the time," we mean *all* of the time. We include the time when starting up on a new lot or size of package, when starting to package a new or different product, when starting a new lot of adhesive, a new anything, when the weather is good or bad—or when any variable is present.

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If a machine is built to produce 100 packages/min., that means 100 packages/min., 6,000/hr., and 240,000 packages each 40-hr. week. The percentage of total production capacity over an extended period such as a week or a month, that your company is willing to accept as satisfactory, will determine the importance to your company of the ten key decisions.

Need Performance Study

It might well be important to packaging to have an outside group make a survey to determine:

1. Maximum production speeds of each machine of specified types (rather than makes), owned by participating companies.
2. Number of hours each of these machines works in a given month.
3. Total production of each of these machines for the month.
4. Speeds these machines averaged for the monthly period.
5. Reasons for downtime and slowdowns.

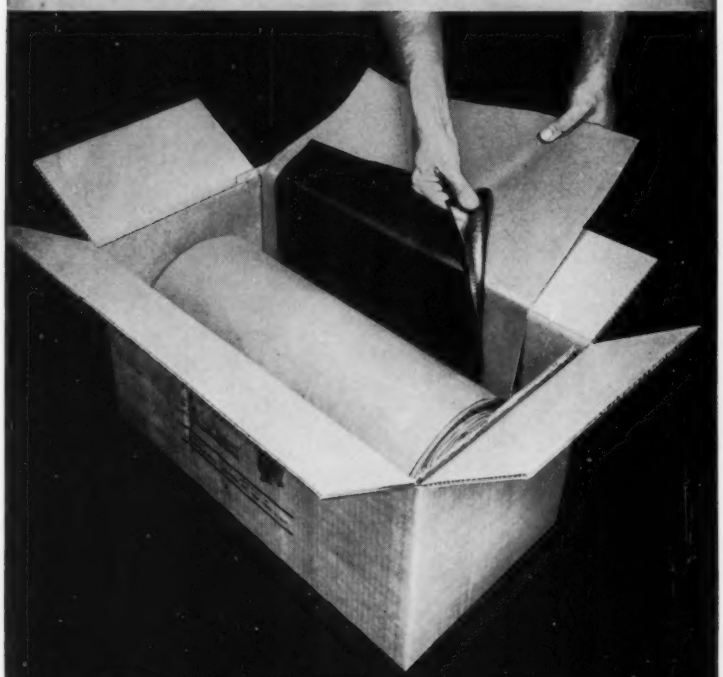
If the foregoing information is properly correlated and then issued in such a manner that it would be impossible for any one company to identify another company from the published figures, such a list should tell each company (that participated) in what area it could best improve its packaging performance. It should point out the best places to save money.

In a baseball game, the runs scored because of errors count for just as much as earned runs. Games are won or lost based upon the total runs scored, irrespective of whether runs are earned or unearned.

When determining packaging machine efficiency, many companies deduct the "unearned runs." They deduct a downtime factor before figuring the percentage of efficiency. This downtime factor is usually from 15 to 25 per cent of the machine time. Thus, a company reporting 96 to 98 per cent efficiency actually is only operating at 76 to 78 per cent efficiency, if the downtime factor is 20 per cent.

Of course, the time required for changing over from one size to another should not be included

2 useful services...



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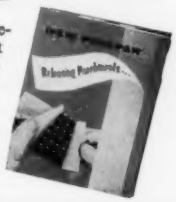

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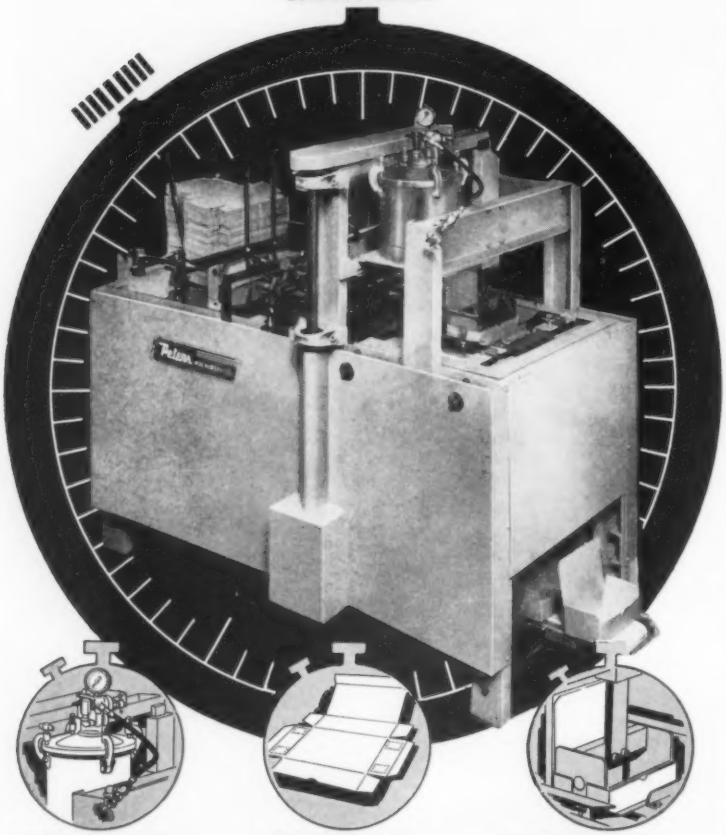

closed glue system
provides clean gluing . . . eliminates costly make-ready and clean-up.

uniform glue pattern—
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high-speed carton and tray forming machines

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when packaging machine efficiency is determined. But the allowance for changeovers should be realistic. It should not include downtime due to other causes, and the time allotted for refining machine adjustment after a changeover should be held to a minimum.

A machine operator is running a particular lot of cartons. Through use of the ten key decisions, he has a comprehensive report of the level of properties important to the efficient running of these cartons on his packaging machine. In this instance, the level of properties is ideal for his machine operation. Variation within limits of acceptability has been held to a minimum by the supplier. The cartons are perfect for the intended end usage. The adhesive is working particularly well. Before long he has the machine running at maximum speed and the cartons are clicking through the machine perfectly, without jam-ups or spoilage. The filled cartons are perfectly shaped and sealed.

Slow Start Usual

If the basic theory of preventive testing is correct, it seems reasonable to expect that the next time that operator, or any other in the packaging department, receives another lot of cartons testing like the one just described, he should be able to *start* running the second lot just as efficiently as he *finished* running the first lot. He should be able to do so, but he cannot—except by accident!

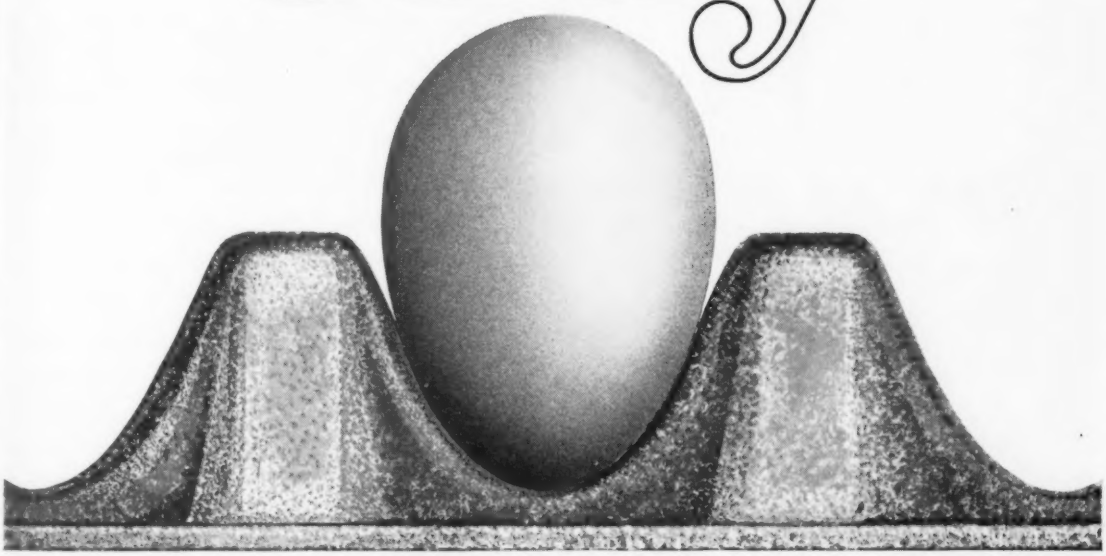
Much Guesswork

From the test information, the operator knows what to expect of the cartons and the adhesive. But, there is no record or information about the machine adjustments used during the first (the perfect) run. He has no information for putting the machine into similar adjustment for the second run.

Packaging machines, and most package-making machines, still depend upon the trained skills of machine operators and adjusters.

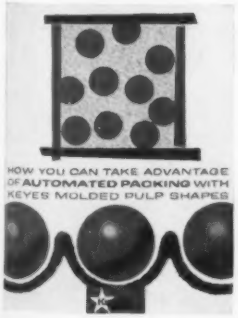
(Turn page)

Ask any



The safest, slickest way to travel is in a Keyes molded pulp package. Molded pulp is the one inexpensive packaging material that combines rigidity with remarkable cushioning properties. That's why better than 75% of all the eggs produced in this country travel first class in molded pulp packaging.

Give your products the same protection and automate your packaging procedures at the same time by using molded pulp packaging. You eliminate fillers, dividers and time-consuming set-ups, reduce costs, cubage and breakage. Often, too, molded pulp gives more protection with less material involved.



For information and a complimentary copy of Keyes' new booklet, "How You Can Take Advantage of Automated Packing with Keyes Molded Pulp Shapes" write on your letterhead to Mr. Dudley Smith, Product Development Manager, Dept. PE-2 Keyes Fibre Company, Waterville, Maine.

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Send for the POWASERT Folder . . . The entire line of POWASERT automatic fastening equipment is described in an 8-page brochure. Please let us send you a copy. Your United Sales Engineer will be glad to demonstrate the equipment for you; or tell us your product and we'll send you facts and figures on similar applications. Call or write, today. United Shoe Machinery Corp., 140 Federal St., Boston, Mass.

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Adjustments concerned with package dimension depend upon the adjuster's skill with a rule, caliper, and his "fingers." Most other adjustments depend upon the operator's trained senses of feel, sight, and hearing. A good operator or adjuster develops these skills and senses to a high degree. They are seldom good enough to make the original set-up for a new "anything" "right on the nose." Adjustments must be modified, often in relation to one another, before the machine again runs at maximum efficiency. This can be expensive.

In many other types of production, newer machines usually contain pneumatic or hydraulic loading devices, frequently supplemented with easily read dials or gauges. Some even have recorders. All supply the missing portion to the effective preventive testing or preventive quality control program.

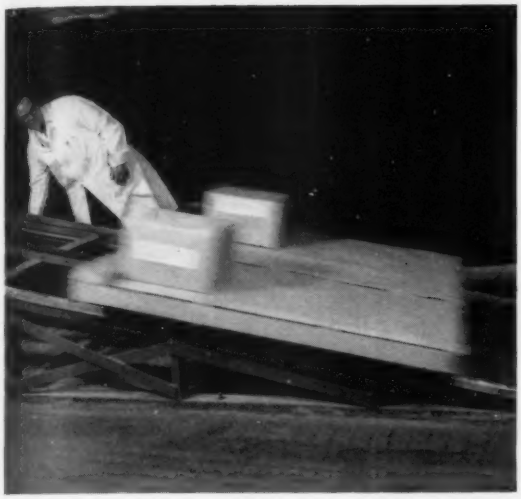
Until such simple means of adjusting and, particularly, of measuring machine adjustments are common place, the best test program or quality control program fails to provide packaging operations with the low-cost, efficient production that a comprehensive, effective preventive testing or preventive quality control program would otherwise make possible.

Wasted man-hours, machine time, individual packages, and/or unsatisfactory filled packages waste money. Until packaging machines utilize to advantage the information made available by the ten key decisions, this waste will continue.

Packaging machine operators and adjusters need assistance to adequately cope with the increasing demands being made upon their skills. The ten key decisions supply such assistance—assistance which the man at the machine will understand and use, and will do so in time for him to use the information to *prevent* wasted dollars. This is a great advance in packaging efficiency. The next needed advance is in measuring and controlling packaging machine adjustment. *(End)*

Engineering Test Center finds...

A coating of Du Pont "Ludox" reduces slippage of corrugated cartons by two-thirds



Here's what happens when plane of Conbur inclined impact tester is released and strikes barrier at six miles per hour. Impact causes untreated carton to slide full length of plane. Other carton, treated with "Ludox" colloidal silica, moves only about one-third as far.

A sudden stop or start can send a stack of cartons sliding so easily that when a package is damaged during shipping, impact is the cause three times out of four. In such cases, the difference between costly damage and safe shipment can be a remarkably simple thing—an invisible coating of Du Pont "Ludox" colloidal silica.

To find out precisely what advantages "Ludox" offers package users, Du Pont's Engineering Test Center recently ran a series of studies using a Conbur inclined impact tester. Corrugated cartons coated top and bottom with submicroscopic particles of "Ludox" slid only about one-third as far as untreated ones.

Users of treated cartons say they are much more stable during in-plant handling as well, minimizing threat of injury to employees. What's more, they resist soiling and offer a sharper printing surface.

Coatings of "Ludox" can be applied to paper or to finished packages by either mills or converters. For names of suppliers of treated cartons and more information about "Ludox", fill out the coupon below.

Miller Brewing Co., Milwaukee, reports that antiskid coating of "Ludox" reduces product damage caused by falling boxes and makes palletizing safer for employees.

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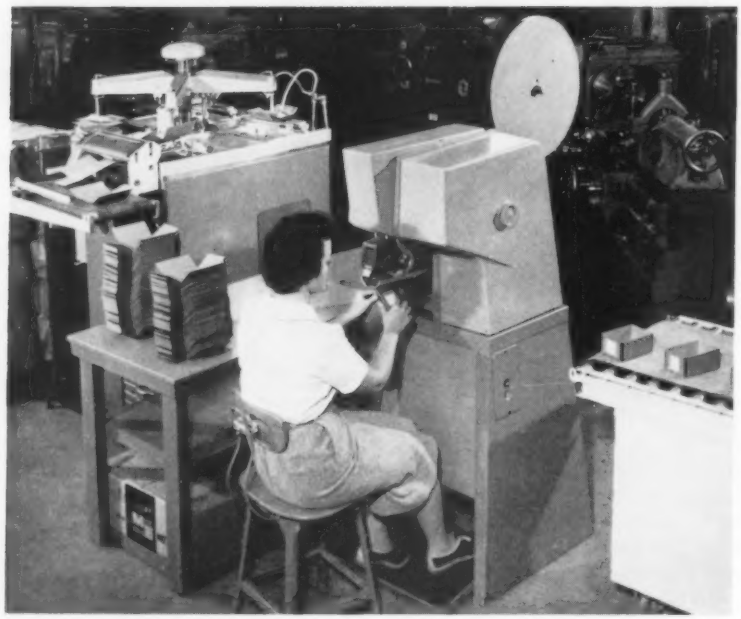
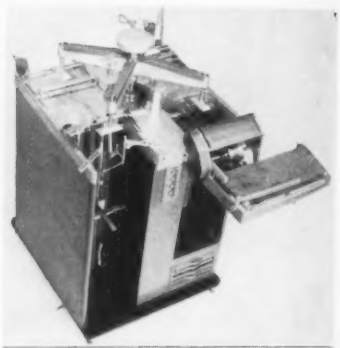




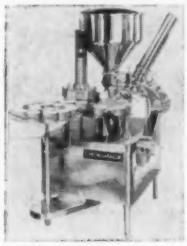
1—Folding And Staying Machines For Metal-Edged Boxes

Two new pieces of equipment are now available for setting up printed Metal Edge paperboard boxes—the Fastayer and the Flashfolder. The latter is a completely new machine designed to provide uninterrupted flow of pre-folded box flats to the Fastayer which applies the metal stays to each corner of a box. It mechanizes the score-breaking operation formerly done by hand. In operation, box flats (made from paperboard up to 0.050-in.) are picked off the top of the magazine hopper, rotated to score-breaking stations, and thrust down on folding rollers. Each box blank is discharged onto kicker feed which passes it into automatic imprinting unit. Pre-folded and imprinted box flats, up to 2500/hr., are then discharged onto conveyor to the staying machine, the Fastayer. In addition to mechanizing the folding process, the folder produces uniformly pre-broken scores and prevents cracking the board liner on the creases due to overbending, the maker states. It also eliminates problems encountered in manual pre-breaking with difficult-to-fold paperboard items, such as those with a shallow depth or boxes fabricated from stiff, heavy board. The Fastayer is a redesigned version of the original Metal Edge stayer. A semi-automatic machine, it cuts off a length of metal staying material and clinches it in the corners of the paperboard flats to form a box. It produces up to 625 to 875 boxes/hr., being adjustable between 60 to 90 strokes/min. For more information write: Metal Edge Industries, Dept. PE, Barrington, N.J., or *circle number on card.*

2—Rotary Filler

The new Model DR-1 is a rotary cottage cheese filling machine. A simple rotating disc provides positive cup control at speeds up to 70 packages/min. This feature eliminates tipping and spill-

ing, and a replaceable disc makes changeover quick and easy, the manufacturer asserts.



The machine handles most of the new plastic containers and lids. Stainless steel top and skirts completely enclose the drive mechanism for sanitation and they facilitate clean up. It is a fully automatic, one-man operation. For more information write: Triangle Package Machinery Co., Dept. PE, 6631 W. Diversey Ave., Chicago 35, Ill., or *circle number on card.*

3—Stopper Vial

Development of a new tamper-proof, resealable container for all kinds of liquids, powders, or

pills has been announced. The new package, called the Opti-seal stopper vial, consists of a standard flint glass vial into which a two-piece polyethylene closure is inserted after filling. The protruding plastic knob of the closure snaps off easily and can be re-inserted. The Lumelite Corp. manufactures the closure and the package is available in sizes of 1, 1½, 2, 3, 4, 5, 6, 7, 8, and 10 drams. For more information write: Kimble Glass Co., Owens-Illinois, Dept. PE, Toledo 1, Ohio, or *circle number on card.* *(Turn page)*

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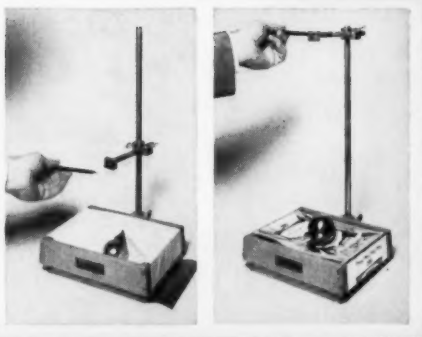

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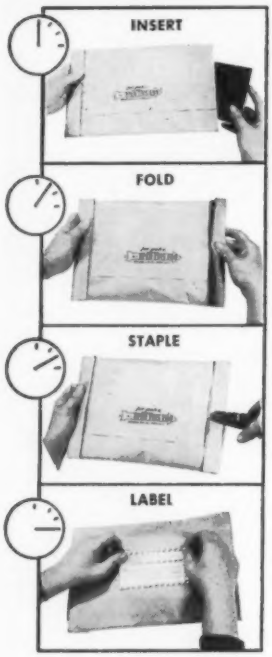

JET-PAK sets new packaging speed record of 15 seconds or less per unit—ready for mailing!

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4 Minimum Waste Motion (supplying materials to bench from storeroom)	One item	
5 Low Cost Imprinting	50¢ per 1,000	
6 Simplified Procurement	1 source	
7 Clean and Attractive	Send for free samples	
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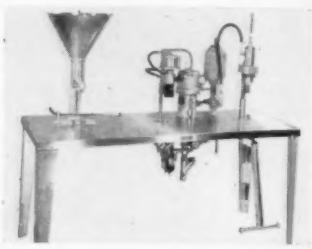
jet-pak
Packaging Division
Columbian Rope Company
Auburn, New York

4—Aerosol Packaging

A new compact aerosol packaging line with a capacity of from 5 to 10 units/min. has been



introduced. The aerosol line was designed as a semiautomatic operation for those doing intermittent or low-volume aerosol packaging. The unit consists of a concentrate filler, a crimper for standard 1-in. valves, and a propellant pressure filler with accumulator and propellant handling pump. The components are mounted on a stainless steel table which occupies 30 in.x6 ft. of floor space. For more information write: The Kartridg Pak Co., Dept. PE, 800 W. Central Rd., Mount Prospect, Ill., or *circle number on card.*

5—Expanded Plastic Foam

A reusable, custom-designed packaging material made from expanded polyethylene foam is

offered for protection against shock, impact, and storage damage of delicate and sensitive products. Called Pack-Tin, the maker says the new plastic material does not dust or deteriorate, is abrasive-resistant, has closed-cell construction, is lightweight, and available in various colors. Fire-retardent, self-extinguishing forms are also available. According to the manufac-

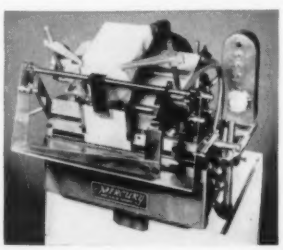
turer, it is unaffected by altitude, temperature variations (down to –60°F.), water, oil, gasoline, and most chemicals. Its maker states the material has equal cushioning effect as other materials, but is lighter in weight. Available in various fabricated parts or sections (such as corner pads or sheets), it can be treated to resist scuffing and facilitate stenciled identification. For more information write: Pac-Tron Inc., Dept. PE, Willow St., Mystic, Conn., or *circle number on card.*

6—Laminated Seed Bag

A new asphalt-laminated, multiwall bag for seed corn has been developed. These 5-ply bags are treated with a fluorochemical paper size (produced by Minnesota Mining & Mfg. Co.) in the asphalt-laminated outer ply. The bags have withstood storage temperatures up to 140°F. without adverse effects on the seed, the maker states. The problem of the asphalt bleeding through the white or colored outer sheet of a multiwall bag has been eliminated through the use of the chemically treated paper, the maker notes further. For more information write: Arkell Safety Bag Co., Dept. PE, 6345 W. 65th St., Chicago 38, Ill., or *circle number on card.*

7—Heat Sealer, Labeler

A new device that automatically holds a flexible package while it is heat sealed with a header-



label is announced. Available as optional equipment with Mercury's VLS-12 bag sealer, it makes the sealing and labeling operation automatic and increases the rate of feeding by the operator up to 50 per cent, according to the manufacturer. The unit seals bags of polyethylene, polypropylene, Pliofilm, saran, cellophane, and other films up to 12 in. wide, attaching header-labels up to 6x10½ in. at the same time the bag is being sealed. It may be used interchangeably as a regular bag sealer, without labels, on cellophane bags. For more information write: Mercury Heat Sealing Equipment Co., Dept. PE, 2601 N. Howard St., Philadelphia 33, Pa., or *circle number on card.*

8—Volumetric Filler

The new Model No. 116 Colton 16-station, volumetric rotary filler provides speeds from 110 to 320 containers/min. Features cited by manufacturer are a low-speed, large-diameter discharge star wheel that reduces whip forces on the filled container, individual nozzle tip shutoffs, Vernier fill adjustment for each station, and a variable platform rise adjustment for bottom-up filling. The machine fills containers from 1½ to 4 in. diameter and up to 10 in. high with liquids, pastes, creams, food products, paint, chemicals, and similar materials. Amount of fill is adjustable from ¾ to 32 fl. oz. For more information write: Arthur Colton Co., Dept. PE, 3400 E. Lafayette Ave., Detroit 7, Mich., or *circle number on card.*

9—Coated Kraft Adhesive

A modified latex adhesive developed for pasting side seams or bottoms and cross-seaming of multiwall, polyethylene-coated kraft bags is available. The manufacturer says the product, called M-P bag adhesive 1380, features strong bonds and high mechanical stability which allows it to perform without gumming up, coagulating, or build-

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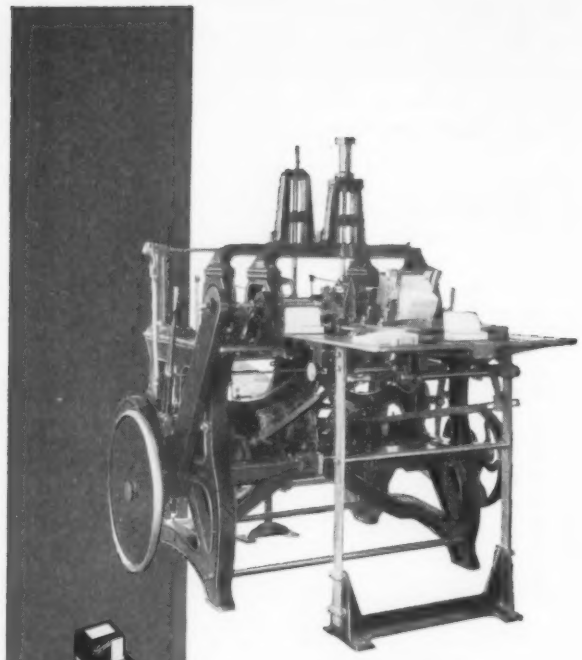

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"Versatility" is the word

. . . for the Brightwood Box Machine. If you have one box size or 100 sizes, you can make them profitably on the Brightwood. Well squared, perfectly glued boxes are formed in one operation from flat printed blanks — one-piece hinged cover, two-piece telescope or lid, trays, tapered cartons, etc. — for a multitude of uses — screws, hardware, cigarettes, bakery goods, candy, cheese, playing cards, wax paper, etc. Write **US** today and get the facts.

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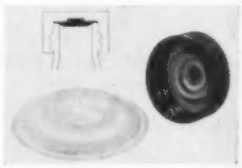
ing up along the sides of the glue pot. The adhesive is diluted and cleaned with water, thus eliminating need for toxic, inflammable organic solvents. For more information write: Morningstar-Paisley, Inc., Dept. PE, 630 W. 51st St., New York 19, N.Y., or *circle number on card.*

10—Polyethylene Cap Liner

Glass and plastic bottles, tubes, and similar containers can be capped with a new closure



called Cushion-Seal. The closure has a polyethylene liner which forms a dome-shaped cushion that snaps into the cap (made from urea phenolic or polystyrene). According to the manufacturer, the liner forms a vapor-proof seal between the closure and the container, seals the container under tension which prevents back-off of the can, deforms to fit minor irregularities in the container throat to prevent leakers, absorbs the shock of high-speed capping machines, and the closure requires no change in production machinery. Standard closure sizes are from 15 through 28 mm. For more information write: Gilbert Mfg. Co., Inc., Dept. PE, Long Island City 3, N.Y., or *circle number on card.*

11—Latex Paper Coating

A new film-forming styrene copolymer latex, to coat paper and paperboard for drinking cups, disposable containers, and food packages, has been introduced. Designated Lytron 6A, the material provides a continuous, non-blocking, clear coating with excellent resistance to hot and cold liquids, grease, and oils, according to the producer. A white water emulsion, the ma-

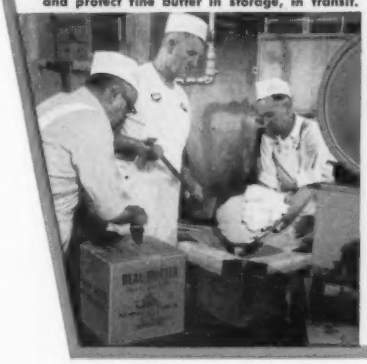
Waldorf knows Packaging

FOR THE PLANT

Freshly churned butter needs a strong, moisture proof box. Waldorf's Paul Bunyan #2 and Blue Ox #4 butter boxes won't sag, won't bend, won't burst . . . they safely stack and protect fine butter in storage, in transit.

Waldorf cartons (for automated and hand packing operations) protect the delicate glass and finely finished wood of Andersen windows (in many sizes and styles) from factory to job site.

These appliances are packed in Waldorf cartons that help prevent damage in storage and shipment. Waldorf also designs automated packaging lines that save appliance makers money.



Waldorf packaging experts, working in cooperation with Producers Container Co., devised a reusable carton for this can manufacturer. This reusable feature saves this company thousands of dollars a year.

Waldorf packaging experience saves you money. To automate your packaging, speed production, and reduce your packaging costs, let Waldorf survey your plant's packaging operation. This service is free and may save you thousands of dollars. Write or phone Waldorf today.

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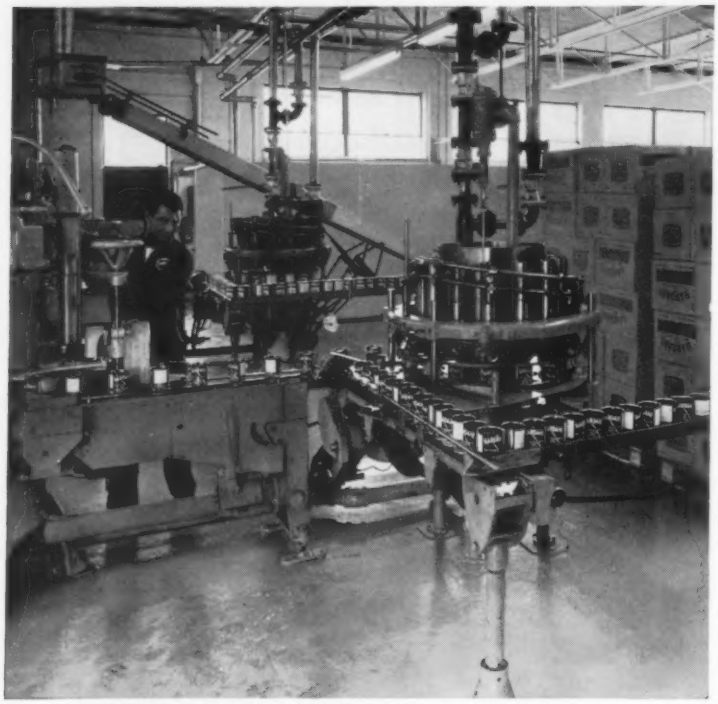

Two Pfaudler Rotary Piston Fillers package a variety of viscosities and container sizes at Bardahl Lubricants Inc., Norwood, Mass.

No filler maintenance in two years at Bardahl

No maintenance. No parts replacement. That's the performance record for these Pfaudler® RPL-14 Rotary Piston Fillers after *two years* of service.

Bardahl runs this production line with these two fillers handling oils which vary in viscosity from SAE-5W to SAE-50W. Filling rates are as follows: 4-oz. containers at 260 cans per minute, 15-oz. at 225 cans per minute, and quarts at 190 cans per minute.

These are *not* the top operating speeds for the RPL-14, since they are geared to Bardahl's *current* production requirements. Actually, these machines are capable of 350 quarts per minute.

Bardahl tolerates *no* spillage – and none occurs in this installation. One reason why you might consider Pfaudler fillers in your plant. Other reasons? **Simplicity** is a key factor. Pfaudler fillers offer a design in which piston and valves can be disassembled without tools in a few minutes. There are no connecting rods or wrist pins to wear out, no piston rings.

You can quickly clean and visually inspect both filler bowl and valve body. And all gearing is totally enclosed in an oil bath.

Accuracy can be held to ±1/10 of an ounce for most materials. You can adjust fill accuracy from a single control point, *without* stopping the machine.

Matched to your needs. The RPL-14 is one of a complete line of fillers from Pfaudler, each designed to meet specific oil packaging requirements. For example, the RPL-36 can handle as many as 800 quarts per minute.

More information. Bulletins No. 964 and No. 878 give specs on the Pfaudler line of fillers for oil packaging. For copies, or answers to your questions, write to our Pfaudler Division, Dept. PE-21, Rochester 3, N. Y.

*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

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terial is applied by spray coating, flush coating, and web coating with conventional equipment and procedures. It is available in 55-gal. polyethylene-lined drums. For more information write: Monsanto Chemical Co., Plastics Div., Dept. PE, Monsanto Ave., Springfield 2, Mass., or *circle number on card.*

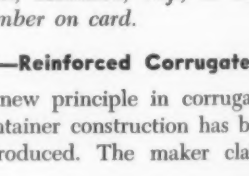
12—Roll Fed Labeler

A new machine has been developed to automatically apply coded thermoplastic labels to

containers directly from roll stock at speeds up to 300 labels/min. The machine, the Label-Dri Champion, automatically imprints coded information just before the label is applied to a container, after being cut from the web. The roll fed labeler provides label verification, no glue label application, automatic code numbering, and accurate cut-off of labels, the manufacturer states. Label sizes accommodated are from ⅞x1¼ in. up to 4x5 in. For more information write: New Jersey Machine Corp., Dept. PE, 1600 Willow Ave., Hoboken, N.J., or *circle number on card.*

13—Reinforced Corrugated

A new principle in corrugated container construction has been introduced. The maker claims

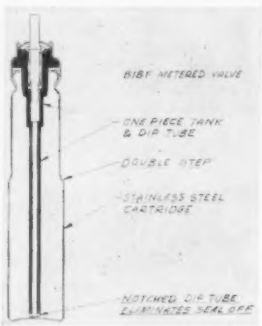


it provides extra strength where needed yet eliminates costly over-packaging. The added strength results from laminating

a strip of reinforcing material between the corrugating medium and the outer layer in certain areas of the container. These strips are incorporated into the container according to the strength needs indicated by the greatest areas of stress in each container. The technique, called Armor-Gard, is reported by the developer after tests, to have increased bursting strength by 60 per cent and puncture resistance by 48 per cent. For more information write: Olin Mathieson Chemical Corp., Packaging Div., Dept. PE, 460 Park Ave., New York 22, N.Y., or *circle number on card.*

14—Purse-Size Aerosol

Recently introduced was a purse-sized aerosol dispenser. A refillable outer container (by


B18F METERED VALVE
ONE PIECE TANK & DIP TUBE
DOUBLE CRIMP
STAINLESS STEEL CARTRIDGE
NOTCHED DIP TUBE ELIMINATES SEAL OFF

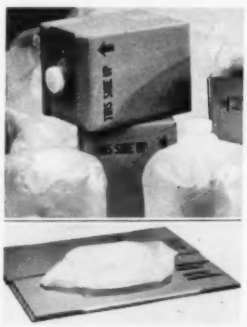
Bridgeport Metal Goods) takes a stainless steel cartridge and a 13-mm., B18F 40-mg. metered valve. The dip tube, which has been incorporated into the molded plastic body construction of the valve, eliminates the possibility of it falling off or sealing off, the maker claims. The lower section of the inner cartridge was made with a larger diameter in order to obtain the 11-cc. volume of the container without elongation of the package. For more information write: VCA Inc., Dept. PE, 1720 Fairfield Ave., Bridgeport, Conn., or *circle number on card.*

15—Bag Sealer, Trimmer

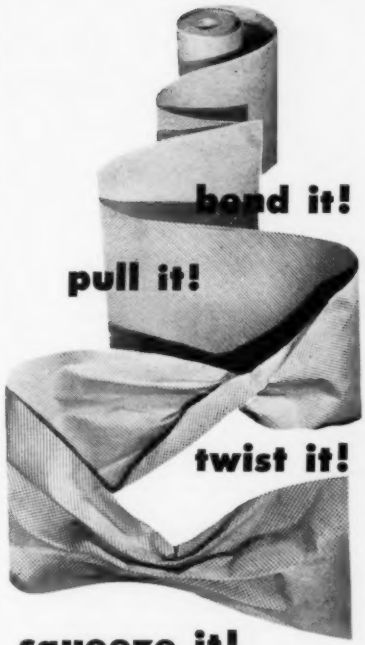
Being manufactured is a new machine which automatically heat seals polyethylene bags, trims up to 4¾ in. of excess bag tops above the heat seal, and ejects the trimmed-off bag tops. Bags may be fed into the machine horizontally, vertically, or at any angle, the maker asserts. Built into the sealer is a variable-speed drive with a range of 315 to 995 linear in./min. The rotary-type sealer will accommodate bag heights from 1½ to 30 in. For more information write: Pack-Rite Machines, Div. of Techtmann Industries, Dept. PE, 407 E. Michigan Ave., Milwaukee 1, Wis., or *circle number on card.*

16—Collapsible Container

Now being manufactured is a new 5-gal. polyethylene container called the Flex-O-Boy.



The square shape of the container allows for insertion into standard corrugated boxes for shipping. It was designed for economy of transportation and warehousing when empty because it is lighter than most common containers and is collapsed when stored, the maker claims. Applications include filling with alkalis, battery acids, and other chemicals of various natures. Food stuffs such as syrups, soft drink concentrates, sauces, and others may also be packaged in the container. Two sizes of openings are available: 28 and 70 mm. For more information write: Associated Plastics, Inc., Dept. PE, 1510 University Rd., Cleveland 13, Ohio, or *circle number on card. (End)*



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101—Pressure-Sensitive Labels

Just released is a folder showing the complete line of "able-stik" pressure-sensitive labels; both plain and printed. To receive this folder write: Allen Hollander Co., Inc., Dept. PE, 385 Gerard Ave., New York 51, N.Y., or *circle number on card.*

102—Vacuum Forming Machine

A new bulletin introduces the Comet Lab-Master, a thermoplastic vacuum forming machine. Operational features are diagramed and described. For more information write: Comet Industries, Dept. PE, 9805 Franklin Ave., Franklin Park, Ill., or *circle number on card.*

103—Packaging Odd Shapes

Packmaster Model 56 is described in folder PS6-1. This machine packages long, irregularly-shaped parts by using soft, sponge rubber sealing rollers which make the cohesive paper conform to the parts. For more information write: Sundstrand-American Broach, Div. of Sundstrand Corp., Dept. PE, Ann Arbor, Mich., or *circle number on card.*

104—Paper, Chipboard Partitions

A 4-page brochure pictures a variety of paper and chipboard partitions and die-cuts. Special designs are available for machine parts, electronic and automotive parts, pharmaceuticals, etc. For a copy of this brochure write: W. J. Bradford Paper Co., Dept. PE, 301 W. 16th St., Holland, Mich., or *circle number on card.*

105—Packaging Adhesives

A booklet outlines a variety of adhesives. Applications described include top and bottom case sealing, tight wrapping, multiple-units, folding cartons, glass and can labeling, laminating, and others. For this booklet write: Swift & Co., Dept. PE, Adhesive Products Dept., Union Stock Yards, Chicago 9, Ill., or *circle number on card.*

106—Cushioned Bags

Literature is available on Jet-Pak insulated, cushioned shipping bags. Included is a description of their construction, how to use them, and a list of 14 stock sizes. To obtain this literature write: Columbian Rope Co., Jet-Pak Packaging Div., Dept. PE, Auburn, N.Y., or *circle number on card.*

107—Polyethylene Openers

Technical Release No. 10 presents findings of experiments with various methods for opening polyethylene-wrapped packages. Types discussed include peelable seals, perforated film, and tear tapes. For more information write: Union Carbide Plastics Co., Div. Union Carbide Corp., Dept. PE, 270 Park Ave., New York 17, N.Y., or *circle number on card.*

108—Multiwall Bags

The 16-page "Multiwall Packaging Guide" contains information on types of multiwall bags, closures, proper storage and handling, loading systems, and multiwall packaging equipment. For more information write: Bemis Bro. Bag Co., Dept. PE, 408 Pine St., St. Louis 2, Mo., or *circle number on card.*

109—Buying Adhesives

"How To Buy Adhesives For Better Adhesion" offers 23 yardsticks for selecting the right adhesives for a particular application. To receive this brochure write: The Arabol Mfg. Co., Dept. PE, 56 Nostrand Ave., Brooklyn, N.Y., or *circle number on card.*

110—Automatic Capping

Eight different models of automatic bottle-capping equipment are illustrated and described in a 6-page pamphlet. General specifications and a list of users are included. For more information write: Consolidated Packaging Machinery Corp., Dept. PE, 1400 West Ave., Buffalo 13, N.Y., or *circle number on card.*

111—Facts About Plastic

"Facts You Should Know About Pliofilm" is an illustrated brochure about this type of plastic material. Methods of ordering, handling, printing, and other non-technical information are given. For this information write: Goodyear Tire & Rubber Co., Dept. PE, Packaging Films Dept., Akron 16, Ohio, or *circle number on card.*

112—Corrugated Box Maker

The Rite-Size box machine is described in a brochure. Machine produces a variety of styles and sizes of shipping containers from corrugated sheet and also makes pads and liners. For this brochure write: Colt Packaging Machinery Co., Dept. PE, 53 Washington Ave., Cranston 7, R.I., or *circle number on card.*

113—Silicone Coatings

A pamphlet, "Nothing Sticks To Paper With Syl-off Silicone Coatings," furnishes a list of manufacturers who produce end products or papers coated with this material. For a copy write: Dow Corning Corp., Dept. PE, Midland, Mich., or *circle number on card.*

114—Package Cushioning

A descriptive brochure is available on Resilo-Pak, a cushioning material made from selected polystyrene beads which are expanded into molded form and tempered. To obtain this brochure write: Armstrong Cork Co., Cushioning Sales Dept., Building Products Div., Dept. PE, 3110 Pearl St., Lancaster, Pa., or *circle number on card.*

115—Handling Cellophane

Nine rules for storing and handling cellophane are outlined in a brochure. With it, user may check proper methods to assure maintaining material in prime condition. For more information write: American Viscose Corp., Film Div., Dept. PE, 1617 Pennsylvania Blvd., Philadel-

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- **PATENTED BELLOWS VALVE** — Positive operation—opens on back stroke to admit air into pumping chamber; closes on forward stroke, for efficient pumping action.

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If you are using aerosol containers, be sure to get all the facts about the Consolidated H-O-F Capper for applying the overcaps before you buy.

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1400 West Ave., Buffalo 13, N. Y.

phia 3, Pa., or *circle number on card.*

116—Band Heat Sealer

An illustrated brochure describes three models of the Rotor-Sealer. Used in heat sealing thermoplastic materials, the band-type sealer features forced water cooling. For more information write: Ralph Chaffee & Co., Dept. PE, 2358-60 Market St., San Francisco 14, Calif., or *circle number on card.*

117—Flame-Retarding Barrier

Pyro-Kure, a barrier material with flame extinguishing properties, is described in a brochure. Nontoxic and noncorrosive to metals, it releases a gas that tends to smother flames. For more information write: American Sisalkraft Corp., Dept. PE, Attleboro, Mass., or *circle number on card.*

118—Cartoner

A bulletin has been prepared to describe the C-24 cartoner which operates at a speed of 60 cartons/min. in the ¼- to ½-lb. range. Carton sizes of 6x2x¾ to 7x3½x1 in. can be handled on this 1-operator machine. For further information write: U.S. Automatic Box Machinery Co., Dept. PE, 122 Arboretum Rd., Roslindale, Boston 31, Mass., or *circle number on card.*

119—Aluminum Closures

In a 40-page illustrated booklet, aluminum closures for a variety of bottled products are described. The publication features the entire line of closures produced by Alcoa for the food, dairy, pharmaceutical, cosmetic, and chemical industries. For more information write: Aluminum Co. of America, Dept. PE, 1657 Alcoa Bldg., Pittsburgh 19, Pa., or *circle number on card.*

120—Package Cushioning

A booklet of 14 pages is devoted to discussion of package cushioning problems such as: cause and prevention of damage, compression resistance, efficiency, cushion factors, drift, set, dusting, etc. Texlite (rubberized hair) and urethane foam are described. For more information write: The B. F. Goodrich Co., Dept. PE, 188 Derby Pl., Shelton, Conn., or *circle number on card.*

121—Pressure-Sensitive Labeler

A specification sheet is available on an automatic pressure-sensitive label applicator. Standard units handle labels from ¼ to 2½ in. wide at speeds of 40 to 300/min. It may be modified to handle labels up to 6 in. wide. For further information write: Avery Label Co., Div. 179,

the question is time

During the past few years, the cancer cure rate has increased from one in four saved to one in three saved: 40,000 more lives saved each year. During the next few years, there will no doubt be new methods of diagnosis, and even cures for some cancers that are considered incurable today. In time, the ultimate goal, cancer prevention, will be achieved. But time alone will not do the job. ● Time plus research will. Research costs money. In the past 14 years, the American Cancer Society has spent about $76,500,000 on cancer research. Much more is needed to accomplish the final conquest of this dread disease. Give generously. Send your contribution to "Cancer," in care of your local post office.

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guard your family...fight cancer with a checkup and a check

Dept. PE, 1616 S. California Ave., Monrovia, Cal., or *circle number on card.*

122—Bag Closers

Specifications and operating features of four models of bag closing machines are outlined in a 4-page pamphlet. These continuous-motion machines close and seal paper bags up to 3-lb. capacities. For more information write: George H. Fry Co., Dept. PE, 42 E. Second St., Mineola, N.Y., or *circle number on card.*

123—High-Density Polyethylene

"101 Ideas in High-Density Polyethylene" is a booklet showing commercial applications of this material. A tabulation is devoted to physical and chemical properties. For more information write: W. R. Grace & Co., Polymer Chemicals Div., Dept. PE, 225 Allwood Rd., Clifton, N.J., or *circle number on card.*

124—VCI Paper Calculator

A booklet includes a chart for calculating requirements necessary to protect a given area with volatile corrosion inhibitor paper. Rules for handling this material are given. For more information write: Ludlow Corp., Dept. PE, Needham Heights 94, Mass., or *circle number on card.*

125—Case Former

A leaflet has been released on the CK/CO case opener-former-positioner machine with discharge. Operated either mechanically or pneumatically, it runs at the rate of 40 or 25 cases/min. For more information write: Crompton & Knowles Packaging Corp., Dept. PE, 100 Berkshire St., Holyoke, Mass., or *circle number on card.*

126—Pressure-Sensitive Products

Containing samples and specifications of the Stixie line of pressure-sensitive products, a sales aid and price list jacket is being offered. For one write: Coated Products, Inc., Dept. PE, 275 Lincoln Blvd., Middlesex, N.J., or *circle number on card.*

127—Cushioning Material

An illustrated leaflet describes Sus-Rap inner packaging material for cushioning such items as radios, electric motors, foils and films, paper stock, glass, and delicate mechanisms. For further information write: Vanant Co., Inc., Dept. PE, 955 S. Water St., Milwaukee 4, Wis., or *circle number on card.*

128—Piston Filler

Literature is being offered on the Votator piston filler. Claiming higher speed and accuracy with reduced spillage, the filler is available with from 6 to 36 stations. For further information write: Girdler Process Equipment Div., Chemetron Corp., Dept. PE, 344 E. Broadway, P.O. Box 43, Louisville 1, Ky., or *circle number on card.*

129—Shipping Bag

Literature is available on the Corro-Bag, a cushioned shipping bag which is constructed from corrugated. Sizes range from 5½x10 to 14¾x20½ in. For more information write: Sherman Paper Products Corp., Dept. PE, Newton Upper Falls 64, Mass., or *circle number on card.*

130—Label Marker

Model 22W self-stop label marker is illustrated and described in a 4-page pamphlet. Unit automatically marks a variety of labels and simultaneously counts, cuts, stacks, or rewinds them. For more information write: Soabar Co., Dept. PE, 5812 Walker St., Philadelphia 24, Pa., or *circle number on card.*

131—Testing Instruments

A brochure describes and illustrates thickness micrometers, burst-strength testers, and basis-weight scales for testing papers, films, foils, boards, tissues, and other sheet materials. For more information write: E. J. Cady & Co., Dept. PE, 674 N. Harlem Ave., River Forest, Ill., or *circle number on card.*

132—Vial Filler, Capper

Information is available on the Capsolut Cartrix unit for automatically feeding, capping, and sealing small bottles and vials. For more information write: Arenco Machine Co., Inc., Dept. PE, 25 W. 43rd St., New York 36, N.Y., or *circle number on card.*

133—Case Former

Data sheets are available on the Caral case former, a machine for setting up shipping containers. Adaptable to most standard case packers, it requires 64 sq. ft. of floor space. Operates at 20 cases/min. For more information write: Caral Packaging Machinery, Inc., Dept. PE, 579 Cleveland Ave., Albany, Cal., or *circle number on card.*

134—Cartoning Equipment

A 6-page pamphlet shows the Tuck-O-Mat (for setting up and tucking the bottom flap of a folding carton), the Convey-O-Mat which conveys set-up cartons for filling, and an automatic carton closer. Various attachments are also depicted. For further information write: Bivans

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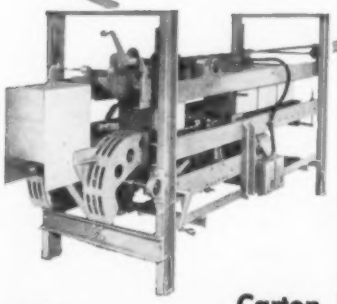

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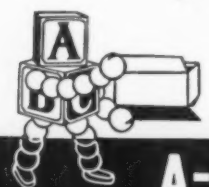

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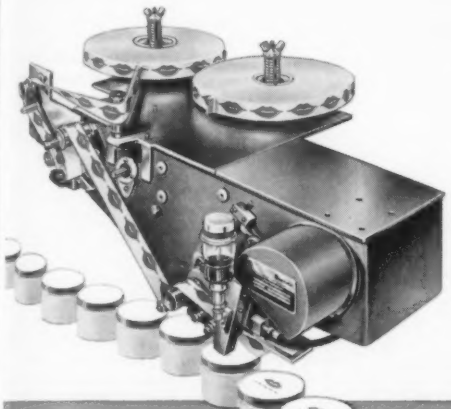

"SCOTCH" BRAND pressure-sensitive tapes take on a new perspective when you think of mating them with equipment such as the "SCOTCH" BRAND S-603 Pad Applicator. In a single "kiss," at one-fifth of a second, the S-603 indexes, registers and attaches printed tape labels, instruction tabs, price spots; seals openings; color codes. It does all this, and more, while keeping pace with production line output of up to 300 units per minute. For more information, contact your 3M Representative, nearest "SCOTCH" BRAND Tape Distributor, or write: 3M Co., 900 Bush Ave., St. Paul 6, Minn. Dept. IBH-21.

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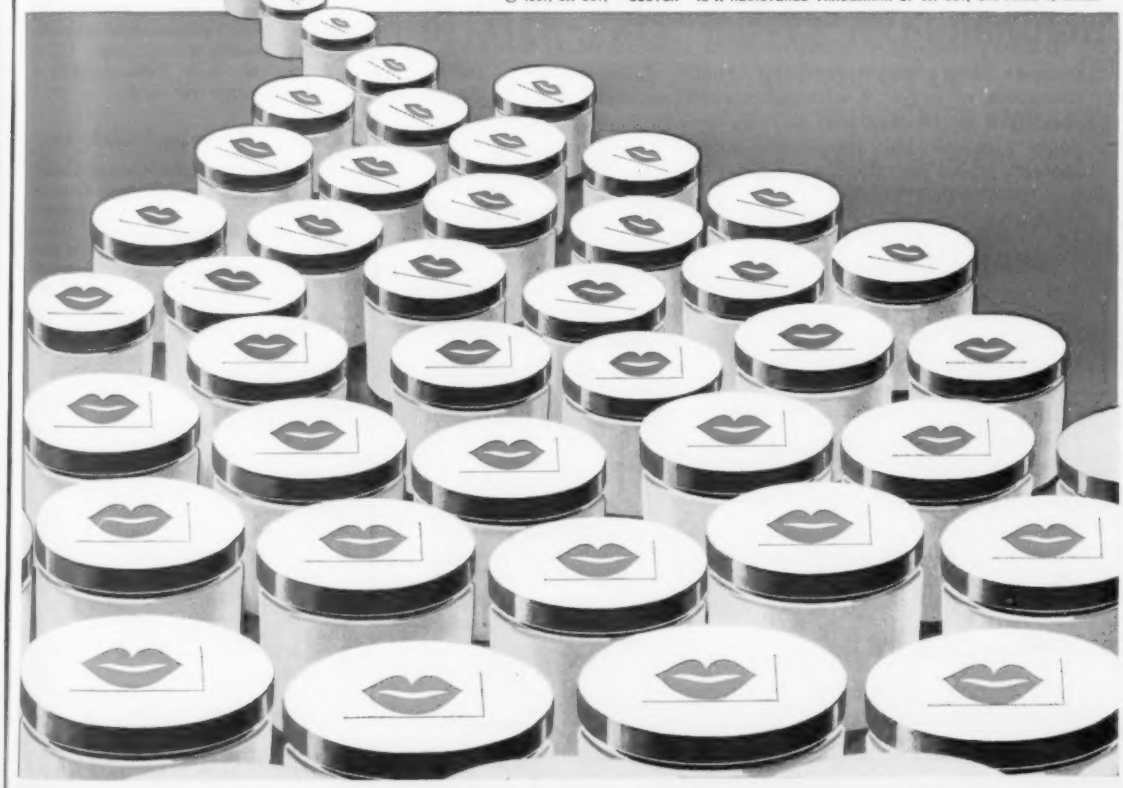

A message to

Package research and development departments
Engineering departments
Technical and research libraries
Everyone concerned with what is being written in the world of packages

We recently were appointed American agents for *Packaging Abstracts*, published by the British research association PATRA—The Printing, Packaging & Allied Trades Research Association. This service gives you, in a single, handy periodical (published monthly, plus an annual index), brief summaries of packaging articles that have appeared in some 200 packaging magazines plus over 150 magazines devoted to printing and allied subjects, and numerous patents, books, pamphlets, and technical data provided by makers of machinery and materials.

This publication is unlike any other abstracting service in the world. It covers technical and operational packaging; it abstracts not only English language periodicals, but translates and abstracts foreign language publications from Germany, Russia, France, and every country in the world that publishes periodicals concerned in whole, or in part, with the various phases of packaging.

At present, each issue is divided into 18 main sections, including among others such subjects as packaging materials, adhesives, labels, coatings, and packaging machinery. An average issue carries about 400 abstracts based on literature received from all parts of the world.

The Cost Is Nominal

It costs thousands of dollars to collect, translate where necessary, evaluate, and abstract pertinent articles. Each month, literally thousands of pages of editorial material are read and the final result put into a handy 5½ x 8½-in. booklet averaging around 75 pages a month, plus the annual index. You can receive the 12 monthly issues plus the annual index for a total annual subscription price of only $42.00.

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Corp., Dept. PE, 2431 Dallas St., Los Angeles 31, Cal., or *circle number on card.*

135—Seamless Cans

In product memo No. 111, light and unbreakable metal cans of seamless, one-piece construction are illustrated and described. Charts show capacities, dimensions, packing/carton, and shipping weights for each type of can. For further information write: Ellisco, Inc., Dept. PE, American & Luzerne Sts., Philadelphia 40, Pa., or *circle number on card.*

136—Piston Filler

A leaflet provides a description and specifications of a 2-cylinder, nonstop piston filler. Feature of the equipment is that filling heads move with containers on conveyor during filling cycle, to eliminate surge. For more information write: Elgin Mfg. Co., Dept. PE, 200 Brook St., Elgin 1, Ill., or *circle number on card.*

137—Polyethylene Coatings

A technical data bulletin, "Low Molecular Weight Polyethylene-Wax Coatings For Corrugated Board," has been released. Bulletin describes characteristics of polyethylene-blended coatings, enumerating the results of tests for hardness, blocking point, chemical resistance, etc. For further information write: Semet-Solvay Petrochemical Div., Allied Chemical Corp., Dept, PE, 40 Rector St., New York 6, N.Y., or *circle number on card.*

138—Labeling Costs

A booklet, "Reduce Carton Content and Product Identification Costs As Much As 90%," has been published. It illustrates and explains a low-cost method for custom printing labels and tags on-the-spot, complete with product information. For further information write: Weber Marking Systems, Inc., Dept. PE, Weber Industrial Park, Mount Prospect, Ill., or *circle number on card.*

139—Ultrasonic Sensing

Catalog 4-1 is available on Sonac, a system for sensing, measuring, and switching by using high-frequency sound waves that are not affected by dust, steam, smoke, etc. Device can be used for automatic counting, package routing, fill control, web-break detection, and others. For more information write: Delavan Mfg. Co., Dept. PE, West Des Moines, Iowa, or *circle number on card.*

140—Tape/Label Dispensers

A brochure illustrates a number of tape and label dispensers, including

electric and manually operated machines. Units handle kraft, reinforced, gummed, and pressure-sensitive tapes. For more information write: Derby Sealers, Inc., Div. Minnesota Mining & Mfg. Co., Dept. PE, Derby, Conn., or *circle number on card.*

141—Paper Samples

A sample booklet of nine different papers that are representative of the grades available is offered. Products produced include white and natural dry waxed kraft, cereal liners, bleached greaseproof, glassine, and so on. For these samples write: Thilmany Pulp & Paper Co., Dept. PE, Kaukauna, Wis., or *circle number on card.*

142—Can Imprinter

A data sheet describes the operation and gives specifications for a can imprinting machine. The machine handles filled or empty cans from ¼ pt. up to 1 gal. in size. For more information write: Charles Beck Machine Corp., Dept. PE, Church Rd., King of Prussia, Pa., or *circle number on card.*

143—Valve Bag Packer

Information is available on the Air-Pac valve bag packer. The machine uses the fluidizing air principle of conveying powdery and free-flowing materials. For additional information write: E. D. Coddington Mfg. Co., Dept. PE, 5048 N. 37th St., Milwaukee 9, Wis., or *circle number on card.*

144—Short Case Sealer

A 4-page brochure on the Model XSA short case sealer for corrugated is offered. The compact machine is adjustable to a range of box sizes and optional features may be incorporated. To obtain this brochure write: A-B-C Packaging Machine Corp., Dept. PE, Tarpon Springs, Fla., or *circle number on card.*

145—Skin-Pack Machine

Illustrated literature is available on an automatic skin or blister packaging machine developed for large-volume producers. Specifications and operational features are included. For additional information write: Abbott Plastic Machine Corp., Dept. PE, 7124 N. Clark St., Chicago 26, Ill., or *circle number on card.*

146—Humidity Indicators

A line of humidity indicating plugs and cards, of the color-change spot type, for military packaging is described and illustrated in a pamphlet. Uses and specifications for each kind are outlined. For more information write: Humidial Co., Dept. PE, P.O. Box 464, Colton, Calif., or *circle number on card.*

147—Weight Calculator

A 4-page brochure has been released illustrating and describing the Datamatic weight calculator. The unit automatically weighs, graphs, averages, and totals weight variations of filled packages. For a copy write: Scale Specialties, Inc., Dept. PE, Box 574, Denville, N.J., or *circle number on card.*

148—Flexible Packager

An illustrated 8-page brochure gives specifications, principles of operation, and applications of custom-built machinery for forming, filling, and sealing flexible packages, with integrated cartoning machines. To obtain this brochure write: Bartelt Engineering Co., Inc., Dept. PE, 1900 Harrison Ave., Rockford, Ill., or *circle number on card.*

149—Plastic Overwrappers

To describe nine new machines available for a variety of industries for overwrapping with plastic films, a 4-page specification sheet has been released. Machines handle laminated foils, cellophane, and most of the soft plastic films. For a copy of this publication write: Battle Creek Packaging Machines, Inc., Dept. PE, Battle Creek, Mich., or *circle number on card.*

150—Hopper Elevator

An illustrated bulletin gives details on a new hopper elevator designed to facilitate loading of parts into the bowls of vibrating parts feeders or parts processing systems, either automatic or semiautomatic. To receive this bulletin write: Syntron Co., Dept. PE, 269 Lexington Ave., Homer City, Pa., or *circle number on card.*

151—Sealing Tips

"Tips On Sealing" is a new folder directed to the subject of packaging and shipping in corrugated containers. Comparisons are made between sealing containers with staples and other fastening methods. For further information write: Bostitch, Inc., Dept. PE, 868 Briggs Dr., East Greenwich, R.I., or *circle number on card.*

152—Thermoplastic Resins

The development of fluorohalocarbon molding and extrusion compounds for use in milk packaging and other applications is announced. Properties of the new resins, called Halon, are discussed in the 8-page Technical Data Report 60-17. For a

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copy of the report write: Allied Chemical Corp., Plastics & Coal Chemicals Div., Dept. PE, 40 Rector St., New York 6, N.Y., or *circle number on card.*

153—Packaging Machinery

A catalog sheet describes six types of packaging machinery available. Included are automatic or manually-operated skin packing machines, heat sealers, batch packaging equipment, blister formers, and blister sealers. For this sheet write: Product Packaging Engineering, Div. of The Electrada Corp., Dept. PE, 5713 Joanne Pl., Culver City, Calif., or *circle number on card.*

154—Film Resins

Elrex polyethylene resins are discussed in a product data guide. Properties and suggested applications for various types of resins are charted and outlined. For copies write: Rexall Chemical Co., Dept. PE, Applications Research & Technical Service, Research & Development Dept., Paramus, N.J., or *circle number on card.*

155—Sewing Head

A descriptive circular is available on the Style 53600H, high-speed sewing head for closing multiwall, cotton, burlap, or osnaburg textile bags. For further information write: Union Special Machine Co., Dept. PE, 487 N. Franklin St., Chicago 10, Ill., or *circle number on card.*

156—Stretchable Kraft

A swatch booklet containing samples of Expanda-Kraft, an extensible kraft paper is available. Offered in three colors, basis weights range from 40 to 100 lb. To receive these samples write: Hollingsworth & Whitney Div., Scott Paper Co., Dept. PE, Chester, Pa., or *circle number on card.*

157—Aerosol Test Tank

Bulletin LTT-1 contains information on an optional safety hood for an aerosol heat and leak test tank. The stainless steel inspection hood is fitted with shatterproof, safety-glass sliding doors. For more information write: Island Equipment Corp., Dept. PE, P. O. Box 38276, Miami 38, Fla., or *circle number on card.*

158—Die Cutting Machines

Detailed descriptions of how United Hytronic die-cutting machines are being used in a variety of industries are presented in a series of fact sheets. To obtain copies of these fact sheets write: United Shoe Machinery Corp., Dept. PE, 140 Federal St., Boston 7, Mass., or *circle number on card.*

159—Polymer-Coated Films

A brochure is offered which outlines the characteristics and uses of polymer-coated films. Yield figures are given for each of the four types of films, known as Avisco RS cellophanes. To obtain this brochure write: American Viscose Corp., Film Div., Dept. PE, 1617 Pennsylvania Blvd., Philadelphia 3, Pa., or *circle number on card.*

160—Unit Packager

A catalog sheet furnishes information on an adjustable unit packager with conveyor feed. Machine (Model UPC-A) is designed to wrap items of different sizes requiring hand feeding. For a copy of catalog sheet UPCA write: Wrap-Ade Machine Co., Inc., Dept. PE, 188 Sargeant Ave., Clifton, N.J., or *circle number on card.*

161—Converting Adhesives

Catalog No. A100, "Packaging and Paper Converting Adhesives," contains 16 pages of illustrated information on applications for five types of adhesives. Physical and chemical properties and features are detailed. For a copy of the catalog write: Armour Alliance Industries, Industrial Adhesives Div., Dept. PE, 16123 Armour St., N.E., Alliance, Ohio, or *circle number on card.*

162—Electric Eye Equipment

A data sheet provides detailed descriptions and prices of the photoelectric LR1 receiver and the LP1 light projector. The maker claims the equipment is waterproof, dustproof, and vibration-proof. For more information write: Electric Eye Enterprises, Dept. PE, 1935 N.W. 191st St., Opa-Locka, Fla., or *circle number on card.*

163—Plastic Boxes

A 16-page catalog is available on Bradley's line of rigid plastic boxes. Custom-molded plastic containers are available and illustrations, sizes, colors, and prices of standard stock boxes are given. For a copy write: Bradley Industries, Dept. PE, 1650 N. Damen Ave., Chicago 47, Ill., or *circle number on card.*

164—Stenciling Equipment

Catalog M-60 gives information on stencil cutting machines, fountain brushes, stencil inks, oil board for stencils, ink chart, stencil rollers, markers, and electric tape machines. For a copy write: Marsh Stencil Machine Co., Dept. PE, 34 Marsh Bldg., Belleville 34, Ill., or *circle number on card.* *(End)*

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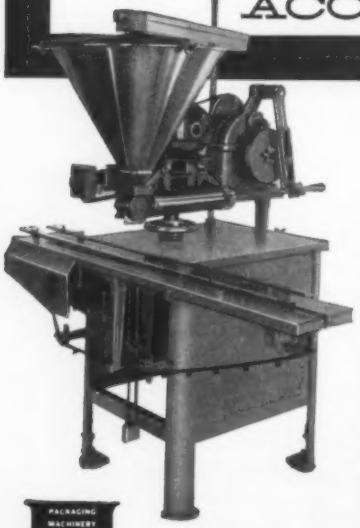

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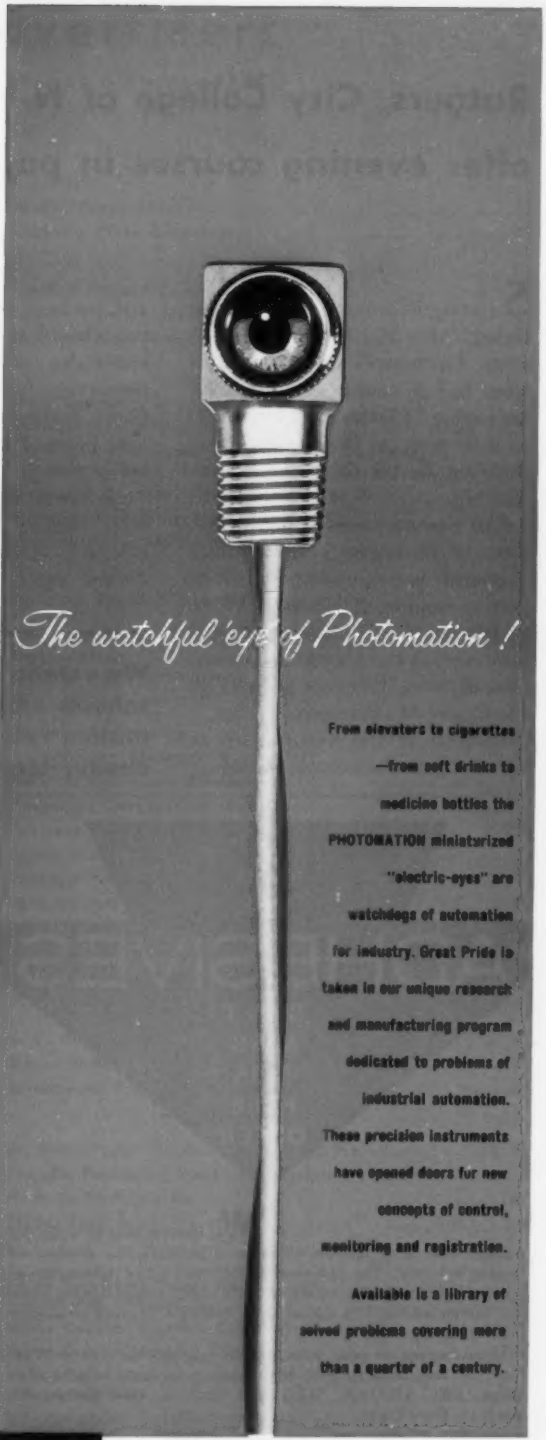
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Rutgers, City College of N.Y. offer evening courses in packaging

Starting February 1 and running through May 24, 1961, Rutgers—The State University's extension division, has a course in "industrial packaging." Classes meet from 8:00 to 9:50 p.m., in Room 77, School Building 23, De Grasse St., Paterson, N.J.

The eastern division of the Society of Packaging and Handling Engineers is cooperating with Rutgers in running this course. Those wishing more information about it may contact the university's extension division, Paterson Center, 36 De Grasse St., Paterson.

Subjects of the lectures are as follows: introduction to packaging and package planning; paper and paperboard; selection of packaging materials; cushioning materials, properties, functions and applications; folding and set-up boxes; fibre boxes—Part I—corrugated container design; fibre boxes—Part II—machinery and inner packing design; tubes and bottles—metal drums, barrels and pails—fibre drums; rigid and flexible plastic containers and forms as related to packaging; wirebound boxes and crates; wooden shipping containers; package testing techniques; export packing; military packaging; cost and economies of packaging; time and motion study in relation to packaging.

Starting on February 8, 1961, the City College of New York (CCNY) has a credit course entitled "industrial packaging," meeting every Wednesday from 6:50 to 8:30 p.m. during the spring term. Those seeking further information should write or phone CCNY's evening session, referring to the course by the title "Management 403."

Registration takes place at the college February 2 and 3. The college is located at 23rd St. and Lexington Ave., New York City. *(End)*

We extend a standing invitation to colleges (and other schools offering courses in packaging) to publish information relative to such courses. Those participating or conducting them should contact our editorial department.

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What we think

Big job faces packaging throughout the free world

People who worry about any prospect of our rising population outrunning our ability to produce food should stop worrying. Rather, they should turn their attention to translating into action the opportunities inherent in today's technological advances and in our growing involvement in a global economy.

Colin Clark, the noted economist, makes it clear that farm and factory output will more than keep up with the bursting population. Further, he asserts that rising populations always stimulate real progress, furnishing the catalyst to solve pressing problems and showing the way to more and better productivity, education, and culture.

As we learned at the National Academy of Sciences-National Research Council symposium on science and food, the technological revolution in agriculture is with us *now*—if it weren't, we would already need thousands more acres than we now use to grow food. This is reassuring. It turns our thoughts away from preoccupation about survival, leaving us free to tackle such specific affairs as the shift in food preparation from the home to the industrial kitchen.

Examples of packaging challenges in food are not merely demands for more convenience or more built-in maid service. Now, restaurateurs, hard pressed to find qualified help, look to food processors for pre-prepared meals and dishes.

But let's not limit these challenges to any one field (say, food) and let's not confine them to our own country. A major trend in American business today is a growing, active participation in the entire free world.

Business abroad is now a major necessity

For one thing, there are huge actual and potential markets we simply can't afford to pass up. Take just one nonfood producer: John H. Breck, Inc. now sells its hair preparations in 70 countries in Europe, Africa, Asia, South America and the Near East. Factories in eleven countries make its bottles—all in accord with Breck's insistence on uniform packages throughout the world. Breck's long range view is that foreign sales will eventually exceed 50 per cent of its entire business.

This is the lesson for producers and packagers: overseas business is no longer just a plus value or "frosting on the cake." Rather, it is vital to a company's growth—even its existence.

Adding a more positive note to one of just getting by, a close look at world conditions today reveals opportunities within reach. For instance, Kaiser Aluminum and Chemical Corporation thinks the potential free world market for primary aluminum lies in the difference between annual per capita consumption in the United States (22.3 lb.) and those of such areas as Western Europe (6.7 lb.), Asia and Oceania (0.5 lb.), or Africa (0.17 lb.).

When we stop worrying about any supposed shortages of food or natural resources (we have plenty for several centuries at least) and concentrate on getting in on the worldwide technological opportunities for packaging innovation, we can start bringing our potential to reality. Our big problem is making free enterprise work on an international basis. Why the urgency? The *rates* of technological change are faster than ever.

Hand in hand with this goes the need of identifying what we do in any foreign land with the ambitions and goals of the people there. This is no abstract notion. Practical managers of international divisions of countless companies reiterate this need. They know that you have to make, package, and market your product with due regard for customs and practices in any given country.

Many obstacles impede our progress to these markets. Just one example about Africa emphasizes the challenge: The man who has done so much to carry out the agricultural revolution abroad, J. G. Harrar, vice president of the Rockefeller Foundation, says the hard part is the actual *transferring* of information and ideas—there are 700 dialects in Africa.

But language barriers (which are falling away) or not, we are just scratching the surface of our chances to develop and refine our packaging efforts—all over the world.

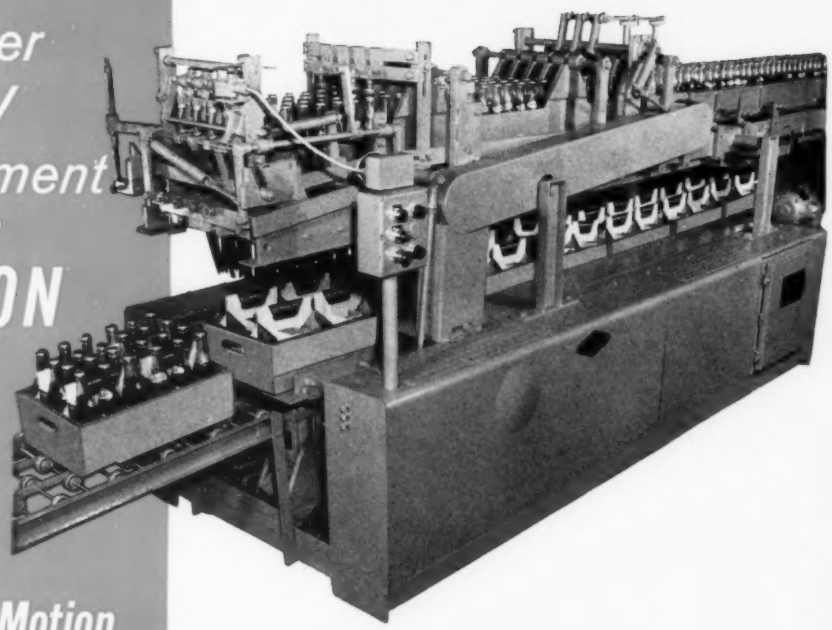
Bruce Hoffman

Editor

Another NEW Development from ATKRON

New Model CP-20

Continuous Motion



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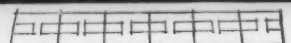
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